Module Handbook

Bachelor Degree Program:

Sport Science, B.Sc.

The Department of Sport and Health Sciences

Module: Composition and Function of the Human Body

1. General data

Title of module
Körperstrukturen und –funktionen
Composition and Function of the Human Body

Module level
Bachelor degree program

Module subtitle
Required module

Semester duration
One semester

Frequency
WS

Language
German

ECTS
7

2. Workload

Contact Hours: 60 hours
Self-study: 150 hours
Total: 210 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to understand and describe the composition and the structures of the human musculoskeletal system
- to fundamentally understand the health effects of preventive and rehabilitative measures on the body
- to remember structures and functions of biomolecules and the mechanisms of biochemical reactions
to understand and describe metabolic processes in the body on the basis of biochemistry

to give an overview of the pathways of basal metabolism, its networking and its regulation

Content

- Biochemical basis of metabolism:
  - Liquid hormones
  - Structures and functions of macronutrients
  - Digestion and absorption
  - Important nutrient-related metabolic pathways
  - Krebs cycle and respiratory chain as a basis for further events in the field of medicine, health and nutrition.

- Functional anatomy of the musculoskeletal system:
  - Bones of the human body
  - Ligaments of the human body
  - Tendons of the human body
  - Muscles of the human body
  - Peripheral nervous system
  - Functional aspects of the individual structures under different conditions such as age, sport and work world
  - Health aspects

Teaching and learning methods

The module consists of 2 lectures with blended learning components. The content of the module is conveyed through lectures and presentations. Students will be encouraged to study the literature and the substantive discussion of the topics.

Courses

1. LV

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<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
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</thead>
<tbody>
<tr>
<td>Name</td>
<td>Biochemical basis of metabolism</td>
</tr>
<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Dr. Hande Hofmann</td>
</tr>
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2. LV

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<tr>
<td>Name</td>
<td>Functional anatomy of the musculoskeletal system</td>
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<tr>
<td>Docent</td>
<td>Dr. Thorsten Schulz</td>
</tr>
</tbody>
</table>

Literature
Horn E: Biochemie des Menschen. Thieme, Stuttgart 2012
Königshoff M, Brandenburger T: Kurzlehrbuch Biochemie. Thieme, Stuttgart 2012
Additional current primary literature

**Recommended prerequisites**
Human biological and biochemical knowledge of secondary level II is a prerequisite to understanding the contents.

4. **Study/Examinations**
The written examination is held in a classroom. Within a limited time and without aids, it will be demonstrated that metabolic processes in the body based on the biochemistry are understood and that the metabolic pathways, their connectivity and their regulation, as well as the functions and structures of the human body can be given again. The answers require choosing from among given multiple choice options.

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Thorsten</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Dr. Schulz</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:thorsten.schulz@tum.de">thorsten.schulz@tum.de</a></td>
</tr>
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</table>
Module: Society and Communication

1. General data

Title of module
Gesellschaft und Kommunikation
Society and Communication

Module level
Bachelor degree program

Module subtitle
Required module

Semester duration
One semester

Frequency
WS

Language
German

ECTS
6

2. Workload

Contact Hours: 60 hours
Self-study: 120 hours
Total: 180 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:
- to remember and understand fundamental sociological and communication science concepts
- to remember and understand the organization and structure of society and the mass media with respect to legal, cultural and economic aspects.
Content
The introductory lectures will provide students with central theories and concepts and, at the same time, offer a compact overview of sociology as well as an overview of communication and media studies. The main topical contents of the courses are:
- Introduction to the issues and theories of sociology, socialization and life cycle,
- Sociological fundamentals of social inequality, culture, gender, family,
- Social developments such as migration, urbanization, industry and labor,
- Information and communication models,
- Fundamentals of individual, organizational and mass communication,
- Media structure and media organization

Teaching and learning methods
The module consists of two lectures. The contents of the lecture are conveyed via a PowerPoint presentation and through multi-perspective presentations and video recordings.

Courses
1. LV
   Type | Lecture
   Name | Introduction to Sociology
   SWS  | 2
   Docent | Prof. Elisabeth Wacker

2. LV
   Type | Lecture
   Name | Introduction to Communication and Media Studies
   SWS  | 2
   Docent | Prof. Michael Schaffrath

Literature
Beck, Klaus (2012): Das Mediensystem Deutschlands. Strukturen, Märkte, Regulierung, Wiesbaden: VS.
Recommended prerequisites
None

3. Study/Examinations
The written examination is held in a classroom. Students will be required to demonstrate that, within a limited time and without the use of aids, concepts and models of communication and media science are understood. The answers require both independent formulations and the selection of multiple-choice answers.

4. Responsible for module

| First name | Michael |
| Last name  | Apl. Prof. Dr. Schaffrath |
| Email      | michael.schaffrath@tum.de |
Module: Fundamental Competences in Psychology and Pedagogy

1. General data

Title of module
Psychologische und pädagogische Basiskompetenz
Fundamental Competences in Psychology and Pedagogy

Module level
Bachelor degree program

Module subtitle
Required

Semester duration
One semester

Frequency
WS

Language
German or English

ECTS
6

2. Workload

Contact Hours: 60 hours
Self-study: 120 hours
Total: 180 hours
3. Description

**Targeted learning outcomes**

After successfully completing the module, students will be able:

- to recall goals, tasks and methods of psychology and classify them by definition in the canon of scientific disciplines (humanities/natural/social science).
- to recall fundamentals of cognitive psychology, learning, emotion, motivation psychology and social psychology.
- to describe the physiological and neurological basis of human experience and behavior and to generalize to different fields of application.
- to name main lines of development, issues, methods and results of education and to describe their significance for action in everyday working life, especially in the field of counseling/intervention.

**Content**

- Objectives and tasks of psychology;
- Fundamentals of
  - cognitive psychology;
  - Learning, emotional and motivational psychology;
  - Social psychology;
- Selected topics in psychophysiology and neuropsychology;
- Exemplary representation of relevant studies;
- Topics in applied psychology;
- Directions of educational science;
- Education and training;
- Extracurricular activity areas: e.g., adult education, leisure education.

**Teaching and learning methods**

The module consists of two lectures. Students are encouraged to deeper engagement with the material through activating exercises as part of the lecture.
Courses

1. LV

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Name</td>
<td>Introduction to Psychology</td>
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<td>Prof. Jürgen Beckmann</td>
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2. LV

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<tbody>
<tr>
<td>Name</td>
<td>Introduction to Education</td>
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<tr>
<td>Docent</td>
<td>Prof. Volker Lippens</td>
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</table>

4. Study/Examinations

The module examination consists of a written test, in which students will retrieve and remember different theories and findings of psychology and pedagogy without aids. Answering the questions requires some personal formulations and some choosing from among multiple choice options.

Literature


Recommended prerequisites

None

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Jürgen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Beckmann</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:juergen.beckmann@tum.de">juergen.beckmann@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Human Movement Science and Biomechanics

1. General data

Title of module
Bewegungswissenschaft und Biomechanik (German)
Human Movement Science and Biomechanics (English)

Module level
Bachelor degree program

Module subtitle
Required

Semester duration
One semester

Frequency
WS

Language
German

ECTS
6

2. Workload

Contact Hours: 60 hours
Self-study: 120 hours
Total: 180 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:
- to recognize the fundamental motor and biomechanical principles and apply them to different examples of sports science
- to understand fundamental relationships between neural control and motor action
to assess basic approaches and models for movement analysis, motor programming, motor learning

to recognize fundamental stages of motor development

to understand fundamental relationships among movements and the factors that cause or influence them,

to understand fundamental relationships on load of biological structures by the action of forces

Content
The lecture covers the areas of exercise science and biomechanics.

Fundamentals of Kinesiology:
- Historical foundations,
- Morphological approaches,
- Ability concepts,
- Motor coordination,
- Functions of the peripheral and central nervous system for motion control,
- Feedback mechanisms and anticipation,
- Motor programs and planning,
- Motor learning,
- Child development and aging
- Application examples.

Fundamentals of Biomechanics:
- Physical laws,
- Mathematical description and modeling of fundamental principles of dynamometry,
- Kinematics and anthropometry,
- Biomechanical measurement methods,
- Basic knowledge of muscle function and muscle mechanics
- Application examples.

Teaching and learning methods
Lecture with PowerPoint and video clips, blackboard. Application examples are used to illustrate fundamental principles.
Courses

1. LV

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<td>Prof. Joachim Hermsdörfer</td>
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2. LV

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<tr>
<td>Docent</td>
<td>Prof. Ansgar Schwirtz</td>
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Literature

Wollny, Bewegungswissenschaft, Meyer & Meyer 2009
Pinel & Pauli, Biopsychologie, Pearson 2007
Meinel & Schnabel, Bewegungslehre - Sportmotorik, Meyer & Meyer 2007
Schmidt & Lee, Motor Control & Learning, Human Kinetics 2011
Wick D: Biomechanik im Sport, Spitta, 2009
Additional literature is announced in the lecture

Recommended prerequisites

Knowledge in natural sciences, mathematics, in particular integral and differential calculus and sports at Abitur level

4. Study/Examinations

The written examination is held in a classroom. In this, understanding of movement science and biomechanics will be demonstrated in a limited time and without aids. In addition, the basic principles will be explained and carried over to other application examples. Computing tasks may also be presented. The answers require choosing from among given multiple choice options.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Joachim</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Hermsdörfer</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:Joachim.Hermsdoerfer@tum.de">Joachim.Hermsdoerfer@tum.de</a></td>
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</table>
Module: Basic Skills of Science

1. General data

Title of module
Basiskompetenz Forschung (German)
Basic Skills of Science (English)

Module level
Bachelor degree program

Module subtitle
Required

Semester duration
One semester

Frequency
WS

Language
German

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After participating in the module, students will be able:
- to explain the fundamentals of scientific work, the scientific literature and citations, as well as scientific theory and to apply selected required programs in the area of IT for scientific work
- to recall sports science research directions and foundations of science theory
to understand principle sports and health science relationships and to specify the provided research methods for specific scientific questions.

**Content**

Fundamentals of sport and health science theory: What is sport science, what is health science? What research methods are used in these research disciplines?

Introduction to sports science works: Theoretical/practical, issues, overview of work techniques and research methods, researching, quoting, presenting, publishing Scientific research methods of the various sub-disciplines in overview (lecture series)

Computer programs: MS Office, CITAVI

**Teaching and learning methods**

Lecture with PowerPoint and video clips

**Courses**

1. **LV**

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<td>Docent</td>
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2. **LV**

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<tr>
<td>Name</td>
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<td>Prof. Jürgen Beckmann</td>
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3. **LV**

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<tbody>
<tr>
<td>Name</td>
<td>Research methods in sports and health science</td>
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<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Prof. Joachim Hermsdörfer, various</td>
</tr>
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</table>
Literature
Röthig u.a. (Hrsg.) Sportwissenschaftliches Lexikon, 7. Auflage. Schorndorf 2003

Recommended prerequisites
Knowledge in natural sciences and mathematics at the Abitur level

4. Study/Examinations
The written examination is held in a classroom. In this, it will be demonstrated that, in limited time and without aids, principle sports and health science relationships can be recognized, and the presented research methods for specific scientific questions can be selected. The answers require choosing from among given multiple choice options.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Ansgar</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Schwirtz</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:Ansgar.Schwirtz@tum.de">Ansgar.Schwirtz@tum.de</a></td>
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</tbody>
</table>
Module: Composition and Function of the Human Body II

1. General data

**Title of module**
Körperstrukturen und –funktionen II  
Composition and Function of the Human Body II

**Module level**
Bachelor degree program

**Module subtitle**
Required module

**Semester duration**
One semester

**Frequency**
SS

**Language**
German

**ECTS**
7

2. Workload

Contact Hours: 60 hours  
Self-study: 150 hours  
Total: 210 hours

3. Description

**Targeted learning outcomes**
After successfully completing the module, students will be able:

- to understand the structure, development and function of the human body as well as individual specific organ systems, to describe them, and moreover apply biomedicine of the body to specific problems
- to understand preventive and rehabilitative influences on the body from the point of view of anatomy and physiology of the internal organs.
Content
Anatomy and physiology of the human body:

- Structure/composition and function of the cell and tissue;
- Structure and function of the muscles and physiological functioning;
- Structure and function
  - of the cardiovascular system (heart and blood vessels),
  - of the blood and immune system,
  - of the lymphatic system,
  - of the respiratory tract;
- Structure/composition and function
  - of the endocrine system,
  - of the digestive system,
  - of the genitourinary system,
  - of the central nervous system.

Teaching and learning methods
The module consists of 2 lectures with blended learning components. The content of the module is conveyed through lectures and presentations. Students will be encouraged to study the literature and the substantive discussion of the topics.

Courses
1. LV

<table>
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<th>Type</th>
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<tr>
<td>Name</td>
<td>Anatomy and physiology of the internal organs</td>
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<tr>
<td>Docent</td>
<td>Prof. Renate Oberhoffer</td>
</tr>
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</table>

Literature
Silverthorn DU: Physiologie. Pearson, München 2009
Faller A, Schünke M: Der Körper des Menschen. Thieme, Stuttgart 2012;
Platzer W: Taschenatlas der Anatomie. Thieme, Stuttgart 2011;
Additional current primary literature

Recommended prerequisites
The module "Composition and Function of the Human Body I" is a prerequisite to understanding the contents, since the physiological contents are based on an understanding of biochemistry.
4. Study/Examinations
The written examination is held in a classroom. In this, in a limited time and without aids, it will be demonstrated that the structures, functions and relationships of anatomy and physiology of the human body are understood. The answers require choosing from among given multiple choice options.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Renate</th>
</tr>
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<tbody>
<tr>
<td>Last name</td>
<td>Prof. Oberhoffer</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:praeventive-paediatrie@tum.de">praeventive-paediatrie@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Science of Training

1. General data

Title of module
Trainingswissenschaftliche Kompetenz (deutsch)  
Science of Training (English)

Module level
Bachelor degree program

Module subtitle
Required module

Semester duration
One semester

Frequency
SS

Language
German

ECTS
6

2. Workload

Contact Hours: 60 hours
Self-study: 120 hours
Total: 180 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to recall fundamental knowledge of training science,
- to understand relationships in condition, coordination, technique and tactics training,
- to understand selected elements of scientific training interventions
**Content**
Training scientific classification, fundamentals of performance physiology, endurance, strength, speed, agility, coordination, technique, tactics, fundamentals of training scientific performance diagnostics, models of training management, research strategies in training science.

**Teaching and learning methods**
Lecture with PowerPoint and video clips. Application examples are used to illustrate fundamental principles.

**Recommended prerequisites**
None

**Literature**

**Courses**

1. LV

<table>
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<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Name</td>
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<tr>
<td>Docent</td>
<td>Prof. Martin Lames</td>
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2. LV

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<tbody>
<tr>
<td>Name</td>
<td>Fundamentals of training science II</td>
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<tr>
<td>Docent</td>
<td>Dr. Daniel Link</td>
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</table>

4. **Study/Examinations**
The written examination is held in a classroom. In this, in a limited time and without aids, it will be demonstrated that the correlations between known forms of training and interventions are understood. MC testing or answering the questions requires one’s own formulations.
5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Martin</th>
</tr>
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<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Lames</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:martin.lames@tum.de">martin.lames@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Learning and Behavior

1. General data

**Title of module**
Lernen und Verhalten (German)
Learning and Behavior (English)

**Module level**
Bachelor degree program

**Module subtitle**
Required module

**Semester duration**
One semester

**Frequency**
SS

**Language**
English

**ECTS**
6

2. Workload

Contact Hours: 60 hours
Self-study: 120 hours
Total: 180 hours

3. Description

**Targeted learning outcomes**
After successfully completing the module, students will be able:

- to differentiate different types of learning, motivation and self-regulation processes
- to describe and understand the cognitive and neurophysiological sequence of learning and motivation processes
to describe conditions under which those values and behavioral habits are learned and stabilized

to specify how different training programs can be designed for relearning and which type of learning model appears appropriate for which change training

to specify conditions under which motivation for behavioral change arises and can be maintained.

Content

- Neurophysiological basis of learning, motivation and self-regulation;
- Learning and motivation theories;
- Basic concept of motivational conditions and their design;
- Conditions and processes of learning approaches and behavior or behavioral styles;
- Behavioral change through unlearning and relearning;
- Design of learning or behavior modification processes,
- Didactic basic orientations

Teaching and learning methods

The module consists of two lectures. Students are encouraged to deeper engagement with the material through activating exercises as part of the lecture.

Courses

1. LV

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<tbody>
<tr>
<td>Name</td>
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<td>Prof. Jürgen Beckmann</td>
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2. LV

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<tr>
<td>Name</td>
<td>Motivation and volition</td>
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<tr>
<td>Docent</td>
<td>Dr. Peter Gröpel</td>
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</table>

Literature

Recommended prerequisites
Lecture Introduction to Psychology

4. Study/Examinations
The module examination consists of a written test, in which students retrieve questions about different theories and findings in the area of learning and behavior without tools and will describe processes and conditions. Answering the questions therefore requires some choosing from among given multiple choices and partly from one's own formulations.

5. Responsible for module

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<thead>
<tr>
<th>First name</th>
<th>Jürgen</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Beckmann</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:juergen.beckmann@tum.de">juergen.beckmann@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Training and Human Movement I

1. General data

Title of module
Training und Bewegung I (German)
Training and Human Movement I (English)

Module level
Bachelor degree program

Module subtitle
Required

Semester duration
One semester

Frequency
SS

Language
German

ECTS
7

2. Workload

Contact Hours: 75 hours
Self-study: 135 hours
Total: 210 hours

3. Description

Targeted learning outcomes
After participating in the module, students will be able:

- to present research methods in biomechanics and to identify biomechanical approaches in various (conditional and coordinative) types of sports and fields of action.
- to understand training scientific relationships in conditioning and coordination training and to develop the optimal loading dosage in recreational and competitive
sports as part of training control and to evaluate the choice of methods (adequate for the question).

**Content**

4 pillars of biomechanical measurement methods (anthropometry, kinematics, dynamometry, electromyography), practice-relevant research methods in different sports (e.g., posture analysis, gait analysis, performance analysis). Fundamentals of fitness and coordination training and determination and interpretation of performance-affecting biomechanical parameters. Application of biomechanical measurement methodology in specific research approaches in exemplary sports.

**Teaching and learning methods**

In the lecture, the fundamentals are explained with the aid of PowerPoint slides; these are delved into in the seminars and exercises through theoretical and practical contributions, such as the application of specific biomechanical methods in a specific type of sport (student presentations, active participation).

**Courses**

1. **LV**

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<tr>
<th>Type</th>
<th>Lecture</th>
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<tbody>
<tr>
<td>Name</td>
<td>Applied Biomechanics and Kinesiology</td>
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<tr>
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<tr>
<td>Docent</td>
<td>Prof. Ansgar Schwirtz</td>
</tr>
</tbody>
</table>

2. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Seminar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Applied Biomechanics and Kinesiology</td>
</tr>
<tr>
<td>SWS</td>
<td>2</td>
</tr>
<tr>
<td>Docent</td>
<td>Dr. Wolfgang Seiberl, NN</td>
</tr>
</tbody>
</table>

3. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Seminar/Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Biomechanics in conditioning and coordination training</td>
</tr>
<tr>
<td>SWS</td>
<td>2</td>
</tr>
<tr>
<td>Docent</td>
<td>Dr. Spitzenpfeil, NN</td>
</tr>
</tbody>
</table>

**Literature**

Riehle H (ed.) Biomechanik als Anwendungsforschung, Transfer zwischen Theorie und Praxis Czwalina, Hamburg 2004
Recommended prerequisites
Successful completion of the module movement science and biomechanics.

4. Study/Examinations
The written examination is held in a classroom. In this, it will be demonstrated that, taking into account conditional and coordinative aspects, biomechanical approaches in various fields of action can be identified and training-specific relationships can be assessed. The answers require choosing from among given multiple choice options.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Ansgar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Schwirtz</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:Ansgar.Schwirtz@tum.de">Ansgar.Schwirtz@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Research Methodologies I

1. General data

Title of module
Deskriptive Statistik, Versuchsplanung und Wahrscheinlichkeitsrechnung
Descriptive Statistics, Experimental Design and Calculus of Probabilities

Module level
Bachelor degree program

Module subtitle
Required

Semester duration
One semester

Frequency
SS

Language
German

ECTS
4

2. Workload

Contact Hours: 45 hours
Self-study: 75 hours
Total: 120 hours

3. Description

Targeted learning outcomes
After participating in the module, students will be able:

- to understand the fundamentals of measurement theory
- to understand the fundamentals of probability theory
- to understand and apply methods of descriptive statistics
- to empirically plan data collection and to calculate their processing
to determine descriptive statistics and present them correctly and scientifically.

**Content**
Theory of measurement, descriptive statistics, fundamentals of scientific work, fundamentals of performing studies (experimental design).

**Teaching and learning methods**
PowerPoint slides, clicker system, diagnostic procedures for conducting studies, statistical programs, online methods

**Courses**

1. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Calculation of probability and descriptive statistics</td>
</tr>
<tr>
<td>SWS</td>
<td>2</td>
</tr>
<tr>
<td>Docent</td>
<td>Prof. Lena Lämmle</td>
</tr>
</tbody>
</table>

2. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Experimental Design</td>
</tr>
<tr>
<td>SWS</td>
<td>1</td>
</tr>
<tr>
<td>Docent</td>
<td>Prof. Lena Lämmle</td>
</tr>
</tbody>
</table>

**Literature**

**Recommended prerequisites**
Basic mathematical skills, foundations of test theory

**4. Study/Examinations**
The written examination is held in a classroom. In this, it will be demonstrated that, in a limited time and without aids, questions about the fundamentals of measurement theory and probability theory can be answered and empirical data collection can be planned, represented and calculated. The answers require one's own formulations.
5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Ansgar</th>
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</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Schwirtz</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:Ansgar.Schwirtz@tum.de">Ansgar.Schwirtz@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Principles of Nutrition

1. General data

**Title of module**
Grundlagen der Ernährung (deutsch)
Principles of Nutrition (English)

**Module level**
Bachelor degree program

**Module subtitle**
Required module

**Semester duration**
One semester

**Frequency**
WS

**Language**
German or English

**ECTS**
6

2. Workload

Contact Hours: 60 hours
Self-study: 120 hours
Total: 180 hours

3. Description

**Targeted learning outcomes**
After successfully completing the module, students will be able:
- to recall the composition of the diet,
- to understand the regulation of fluid balance,
- to distinguish forms of nutrition,
- to have an overview of hormonal regulation of hunger and satiety,
to classify the importance of demand and recommendation,
to understand the impact of insufficient supply and oversupply of nutrients on health, and
to understand nutritional relationships and to assess their importance in relation to physical performance.

Content
- Composition of the diet (macro and micro nutrients);
- Regulation of fluid balance;
- Selected diets;
- Common nutritional problems;
- Nutrition-associated diseases;
- Food consumption;
- Eating behavior;
- Food choices;
- Exemplary diagnostics;
- Dietary recommendations, taking into account age, gender and physical strain

Teaching and learning methods
The module consists of two lectures. The contents of the lectures are conveyed through presentations. Students will also deal with complementary literature on nutritional issues.

Courses
1. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Fundamentals of Nutrition and Hydration</td>
</tr>
<tr>
<td>SWS</td>
<td>2</td>
</tr>
<tr>
<td>Docent</td>
<td>Prof. Hans Hauner</td>
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</tbody>
</table>

2. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Sports and Nutrition</td>
</tr>
<tr>
<td>SWS</td>
<td>2</td>
</tr>
<tr>
<td>Docent</td>
<td>Dr. Ulrike Amann-Gassner</td>
</tr>
</tbody>
</table>
Literature

Recommended prerequisites
Composition and Function of the Human Body I & II

4. Study/Examinations
The written examination is held in a classroom. In this, in limited time and without aids, it will be demonstrated that the students can make associations between basics of food composition and various forms of nutrition in the context of physical movement. The answers require choosing from among given multiple choice options.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Johann</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Hauner</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:hans.hauner@tum.de">hans.hauner@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Sports Medicine

1. General data

Title of module
Sportmedizin (German)
Sports Medicine (English)

Module level
Bachelor degree program

Module subtitle
Required module

Semester duration
One semester

Frequency
WS

Language
German or English

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to describe typical injuries and diseases of the musculoskeletal system, particularly the joints
- to describe the biological, anatomical and biomechanical principles of (sports) traumatic and orthopedic disease patterns.
➢ to explain physiological and biochemical adaptations in sports
➢ to describe the influence of physical activity on the organism and its significance for prevention and rehabilitation
➢ to describe methods for strengthening and stretching muscles and for mobilization of joints
➢ to apply appropriate forms of training and allocate them to defined muscle groups
➢ to demonstrate strengthening and stretching programs

Content
➢ Introduction to sports medicine;
➢ Fundamentals of traumatology,
➢ Fundamentals of sports traumatology;
➢ Fundamentals of sports orthopedics;
➢ Impact of sports performance and various environmental influences on the organism;
➢ Methods for strengthening and stretching muscles;
➢ Methods for mobilization of joints;

Teaching and learning methods
The module consists of lectures and exercises. The contents of the lectures are conveyed through presentations. Students will be encouraged to study the literature and the substantive discussion of sports medicine topics. The exercises are performed in an action-oriented form of instruction. The instructional content is demonstrated here, worked on and analyzed in self-realization. This is to encourage students to deepen their knowledge through the study of the literature and to analyze and apply the learned methods in small groups systematically for all muscle groups.

Courses

1. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Internist sports medicine</td>
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<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Prof. Martin Halle</td>
</tr>
</tbody>
</table>

2. LV

<table>
<thead>
<tr>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td>Name</td>
<td>Orthopedic/trauma sports medicine</td>
</tr>
<tr>
<td>SWS</td>
<td>1</td>
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<tr>
<td>Docent</td>
<td>Prof. Thomas Horstmann, Dr. Torsten Brauner</td>
</tr>
</tbody>
</table>
3. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Function gymnastics</td>
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<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Necker, Giegerich, Reiner, Creamer, Kern</td>
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4. LV

<table>
<thead>
<tr>
<th>Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Equipment training</td>
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<tr>
<td>SWS</td>
<td>1</td>
</tr>
<tr>
<td>Docent</td>
<td>Necker, Giegerich, Reiner, Creamer, Kern</td>
</tr>
</tbody>
</table>

**Literature**


**Recommended prerequisites**

Body structures and functions I & II, movement science, training scientific expertise

4. **Study/Examinations**

The written examination is held in a classroom. In this, it will be demonstrated that the students can recall the fundamentals of sports medicine and its application in the field of functional gym and training equipment in a limited period of time and without aids. It will also be demonstrated that the stressed musculature for the performance of sporting movements are properly described and related. The answers require choosing from among given multiple choice options. To examine leadership skills, an exercise performance is provided in addition to the exam. This is considered passed if selected mobilization, strengthening and stretching methods are demonstrated correctly in the courses (course work, not graded).

5. **Responsible for module**
<table>
<thead>
<tr>
<th>First name</th>
<th>Thomas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Horstmann</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:thomas.horstmann@tum.de">thomas.horstmann@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Sport Management

1. General data

Title of module
Sportmanagement (German)
Sport Management (English)

Module level
Bachelor degree program

Module subtitle
Required

Semester duration
One semester

Frequency
WS

Language
English

ECTS
6

2. Workload

Contact Hours: 60 hours
Self-study: 120 hours
Total: 180 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to understand fundamental processes of the general business administration and the special business administration (in the range of different functions, such as marketing, human resources, finance) in sports, entrepreneurship in sports as well as management in sports
to remember and understand principles of corporate governance, which manifest themselves in management processes (planning, organization and management, controlling, documentation)

- to transfer learning content to suppliers of sports products and services of different types (e.g., associations, partnerships)
- to understand basic concepts and processes of business start-ups in sports

**Content**

Strategic business planning - customer management - performance management - HR management - financial management and investment planning - internal and external financial accounting - internationalization and growth strategies - characteristics of entrepreneurship and management in sport - principles, processes, success and risk factors of the company's founding in sports - choice of legal form and legal aspects of founding a company - market analysis at the company's founding

**Teaching and learning methods**

The module consists of two lectures and one exercise. In the lectures, the necessary knowledge is provided by presentations of the lecturers. Students are encouraged to study the literature and the substantive discussion of the topics. In the exercise, students work on current challenges in management from the perspective of providers of sports products and services and develop relevant problem-solving strategies. In order to be able to understand fundamental concepts and processes of sport management, they create and present a business plan and take a critical position (both in partner work).

**Courses**

<table>
<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Name</td>
<td>Introduction to Management (Introduction to Management)</td>
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<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Prof. Jörg Königstorfer</td>
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2. LV

<table>
<thead>
<tr>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td>Name</td>
<td>Entrepreneurship and Management in Sport</td>
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<tr>
<td></td>
<td>(Entrepreneurship and Management in Sport)</td>
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<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Prof. Jörg Königstorfer</td>
</tr>
</tbody>
</table>

3. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Entrepreneurship and Management in Sport</td>
</tr>
<tr>
<td></td>
<td>(Entrepreneurship and Management in Sport)</td>
</tr>
<tr>
<td>SWS</td>
<td>1 SWS</td>
</tr>
<tr>
<td>Docent</td>
<td>Felix Wemmer</td>
</tr>
</tbody>
</table>

**Literature**


**Recommended prerequisites**

None

4. Study/Examinations

In order to demonstrate that, in limited time and without aids, questions about the fundamentals of business administration and sports management (e.g., principles of company management, management functions, processes of entrepreneurship) can be answered, the examination, on the one hand, is provided in the form of a written classroom examination. The questions include possible answers from a series of predetermined multiple choice options. Short computing tasks are also posed in order to test for the understanding of financial ratios and formulas, which are fundamental for the management, (e.g., calculation of rates of return). In order to demonstrate that management principles can be applied in the sports context, on the other hand, the creation and presentation of a business plan (coursework) is required.

5. Responsible for module
<table>
<thead>
<tr>
<th>First name</th>
<th>Jörg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Prof. Königstorfer</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:joerg.koenigstorfer@tum.de">joerg.koenigstorfer@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Training and Human Movement II

1. **General data**

   **Title of module**
   Training & Bewegung II (German)
   Training & Movement II (English)

   **Module level**
   Bachelor degree program

   **Module subtitle**
   Required

   **Semester duration**
   One semester

   **Frequency**
   WS

   **Language**
   German or English

   **ECTS**
   7

2. **Workload**

   Contact Hours: 90 hours
   Self-study: 120 hours
   Total: 210 hours

3. **Description**

   **Targeted learning outcomes**
   After successfully completing the module, students will be able:
   - to explain and evaluate methods of motor sport diagnoses
   - to understand basic methods of the sport motor learning
   - to assess which methods are to be used in different professional situations
   - to perform and evaluate sport motor tests for different types of sports
to develop and perform training measures, taking into account conditional, coordi-
native, tactical and mental aspects

**Content**

- Methods of sports motor diagnostics
  - Quality criteria for testing
  - Evaluating the validity of selected methods
- Representation of simple test methods
- Application options
- Principles of sports motor learning
- Selected tests in a sport/exercise space
- Analysis of results
- Training concepts for:
  - Condition
  - Coordination
  - Tactics
  - Applied sport psychology
- Implementation of training measures

**Teaching and learning methods**

In the lecture, the fundamentals are explained with the aid of PowerPoint slides; these are delved into in the seminars and exercises through theoretical and practical contributions, such as the use of special motor skills tests in a specific type of sport (student presentations, active participation)

**Courses**

1. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Sport motor diagnostics and sport motor learning</td>
</tr>
<tr>
<td>SWS</td>
<td>2 SWS</td>
</tr>
<tr>
<td>Docent</td>
<td>Prof. Joachim Hermsdörfer</td>
</tr>
</tbody>
</table>

2. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Sport motor tests</td>
</tr>
<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Dr. Peter Spitzenpfeil, NN</td>
</tr>
</tbody>
</table>
3. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Training aspects in different types of sports</td>
</tr>
<tr>
<td>SWS</td>
<td>2 SWS</td>
</tr>
<tr>
<td>Docent</td>
<td>Dr. Peter Spitzenpfeil, NN</td>
</tr>
</tbody>
</table>

**Literature**


**Recommended prerequisites**

Training & movement I

4. Study/Examinations

The written examination is held in a classroom. In this, it will be demonstrated that questions for sports motor diagnostics and the sports motor learning can be answered in a limited time and without aids. In addition, qualified participation in the exercises “sport motor tests” and “training aspects in different sports” is required, in which participants will learn the practical application of motor skills tests and training measures in self-realization (course work).

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Peter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Dr. Spitzenpfeil</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:peter.spitzenpfeil@tum.de">peter.spitzenpfeil@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Research Methodologies II

1. General data

**Title of module**
Epidemiologie und Inferenzstatistik (German)
Epidemiology and Inference Statistics (English)

**Module level**
Bachelor degree program

**Module subtitle**
Required module

**Semester duration**
One semester

**Frequency**
WS

**Language**
German

**ECTS**
6

2. Workload

<table>
<thead>
<tr>
<th>Contact Hours:</th>
<th>60 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-study:</td>
<td>120 hours</td>
</tr>
<tr>
<td>Total:</td>
<td>180 hours</td>
</tr>
</tbody>
</table>

3. Description

**Targeted learning outcomes**
After successfully completing the module, students will be able:

- to collect empirical data, to determine statistics, and to present scientifically and correctly
- to understand and apply parametric and nonparametric tests for testing differences and correlations
- to understand basic concepts, methods and issues in the fields of epidemiology and public health
to understand and interpret indicators of epidemiology, as well as to establish a reference to the causes and consequences of health-related states and events in populations.

to deal critically with health effects and preventive measures in knowledge of research methods of these areas

to understand causality principles in the development of disease

**Content**

- Definition epidemiology and sub-regions, e.g., work epidemiology, environmental epidemiology, genetic epidemiology, etc.,
- Descriptive epidemiology (frequency distribution of diseases),
- Analytical epidemiology (causal origins),
- Interventional epidemiology with science-based courses of action for successfully combating and overcoming diseases.
- Inferential statistics,
- Performing studies,
- Application of statistical programs,

**Teaching and learning methods**

A 2-hour lecture is offered in the area of epidemiology, which can be alternatively supplemented by case-based knowledge or alternatively allocated as part of the VHB course Epidemiology. In addition, PowerPoint slides, a clicker system, diagnostic procedures for conducting studies, statistical programs and online methods are used.

**Courses**

1. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
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</tr>
<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>NN</td>
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</table>

2. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Inferential Statistics</td>
</tr>
<tr>
<td>SWS</td>
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</tr>
<tr>
<td>Docent</td>
<td>Dr. Martina Gratz</td>
</tr>
</tbody>
</table>
**Literature**

**Recommended prerequisites**
Basic mathematical skills, foundations of test theory

4. **Study/Examinations**
The written examination is held in a classroom. In this, it will be demonstrated that indicators of epidemiology can be interpreted, and a reference can be made to the causes and consequences of health-related states and events in the population. In addition, it must be demonstrated that parametric and nonparametric tests are used to test differences and correlations and presented empirical data are processed, statistics are specified and can be shown to be scientifically correct. The answers require both independent formulations and the selection of multiple-choice answers.

5. **Responsible for module**

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<thead>
<tr>
<th>First name</th>
<th>Ansgar</th>
</tr>
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<tbody>
<tr>
<td>Last name</td>
<td>Prof. Schwirtz</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:ansgar.schwirtz@tum.de">ansgar.schwirtz@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Applied Sport Psychology

1. General data

Title of module
Angewandte Sportpsychologie (German)
Applied Sport Psychology (English)

Module level
Bachelor degree program

Module subtitle
Compulsory module

Semester duration
One semester

Frequency
WS

Language
English

ECTS
5

2. Workload

Contact Hours: 45 hours
Self-study: 105 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:
- explain how and where sport psychological knowledge and methods can be applied,
- interpret the results of sport psychological diagnostics and derive suitable interventional goals and interventions,
- develop a systematic intervention approach including basic training, skill training and crisis intervention,
- make use of various psycho-regulatory procedures (selected relaxation and activation methods) corresponding to the goal of the intervention.

**Content**

- Objectives and tasks of applied sport psychology; Fundamentals of sport-psychological diagnostics; Interventions in basic training; Psychological skills training; Recovery vs. stress and avoiding overtraining; Methods of crisis intervention; Mental toolbox.
- Fundamentals of psycho-regulation; Arrangement and presentation of activation and de-activation procedures; Concentration training and the development of routines; Recreational stress balance.

**Teaching and learning methods**

The module consists of a lecture course and practical exercises. The contents of the lectures are presented in the form of readings combined with and mediated through special presentations. Through the formulation of applicable problems using case studies, students will be incited to confront themselves in depth. In the exercises, the students will prepare the implementation of psycho-regulatory processes and concentration exercises in self-study under guidance and then practice these with their fellow students.

**Courses**

1. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
</tr>
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<tr>
<td>Name</td>
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<tr>
<td>Docent</td>
<td>Dr. Peter Gröpel</td>
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2. **LV**

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<tr>
<td>Name</td>
<td>Sport Psychological Intervention</td>
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</tr>
<tr>
<td>Docent</td>
<td>Dr. Jürgen Beckmann</td>
</tr>
</tbody>
</table>
Literature

Recommended prerequisites
Psychological and basic educational competency, "Learning and Behavior"

4. Study/Examinations
The examination performance will be assessed in the form of a written exam. Here, it should be demonstrated that the results of sport psychological diagnostics can be interpreted and sport-psychological interventions can be evaluated. The answers require both independent formulations and the selection of multiple-choice answers. In addition, a study performance (not graded) is to be provided in the form of an exercise. Here, a deeper understanding of sport psychological support is to be demonstrated.

5. Responsible for module
<table>
<thead>
<tr>
<th>First name</th>
<th>Jürgen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Beckmann</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:juergen.beckmann@tum.de">juergen.beckmann@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Sports Biology

1. General data

Title of module
Sportbiologie (German)
Sports Biology (English)

Module level
Bachelor degree program

Module subtitle
Required module

Semester duration
One semester

Frequency
WS

Language
German

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:
- to recall different performance adjustments based on biological principles,
- to detect biological changes due to sports activity,
- to identify heterochronic adaptations of biological systems to sports stress,
- to define doping according to the official control system of sports, to describe biomedical (side) effects, and to name and discuss doping prevention approaches,
- to understand and discuss doping from different viewpoints (biomedical, media, legally, ethically).
Content
Deepening of the biomedical fundamentals lectures on anatomy, physiology, exercise physiology from the perspective of organ-specific adaptations through sport in terms of performance improvement:

- Molecular biological parameters for the adaptations of:
  - Skeletal muscle,
  - Heart muscle,
  - Endocrine system,
  - Immune system.
- Special environmental conditions (heat, cold, altitude, depth, weightlessness) and athletic fit.
- Sport biological changes in life span;
- Sport biological adjustments for gender diversity;
- Molecular biological fundamentals of doping and prohibited methods;
- Biomedical (side) effects of doping;
- Doping controls and analyses;
- Legal foundations, doping prevention strategies and programs, WADA Code

Teaching and learning methods
The module consists of two lectures and one seminar. In the lectures, necessary knowledge is provided through forms of presentation and e-learning components and enriched by experts from practice. Students are encouraged to study the literature and to thoroughly discuss the topics. In the seminar, the theoretical fundamentals provided in the lecture are deepened on the basis of tasks and research knowledge is presented.
Courses

1. LV

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<td>Dr. Thorsten Schulz</td>
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<td>Sport Biological Topics</td>
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<td>NN</td>
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</table>

Literature


Current primary literature

Recommended prerequisites

Modules Body Composition and Functions and Sports Medicine

4. Study/Examinations

In order to demonstrate that selected organ-specific adjustments through sports in terms of performance improvement as well as doping including biomedical side effects and measures of combating it can be recalled, there is a written exam in limited time and without aids. The answers require choosing from among given multiple choice options.

Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Thorsten</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Dr. Schulz</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:thorsten.schulz@tum.de">thorsten.schulz@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Health promotion and exercise

1. General data

Title of module
Gesundheitsförderung und Bewegung (German)
Health Promotion and Exercise (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
WS

Language
German or English

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:
- to understand concepts, goal definition and models in the context of health promotion through exercise,
to name quality criteria for health sports,
to record addressee correct training goals,
to recall selected healthy sports programs in different settings,
to describe components of physical training in the application field of prevention and health promotion,
to create concepts of prevention programs, for example, back training, aqua fitness or alternatively body experience and
to demonstrate training contents of health sports.

Content

- Fundamentals of prevention and health promotion in the context of the movement;
- Components of a preventive oriented activity program;
- Introduction to quality assurance in health sports;
- Load metering and control in health sports;
- Conception and realization of health-promoting exercise programs for various target groups in different settings;
- Fundamentals of exercise programs (such as Feldenkrais, aqua fitness or fundamentals of back exercise)
- Use of selected small devices;

Teaching and learning methods

In the seminar, content is presented in the form of a lecture as well as interactively developed with the students. Instructional content is illustrated here in part by computer animated presentations. There is also work in small groups. The seminar is complemented by an action-oriented exercise in which teaching content is developed and analyzed in self-realization and under guidance individually or in the group. This is to encourage students to apply knowledge acquired in the lecture on topics and target groups and to deepen it by studying the literature.

Courses

1. LV

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<td>Name</td>
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<td>Docent</td>
<td>Dr. Christiane Peters</td>
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2. LV

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### Name
Health sports (back exercise, Feldenkrais or aqua fitness)

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<th>SWS</th>
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<tr>
<td>Docent</td>
<td>Peters, Necker, Giegerich, Creamer, Reiner, Stortz, NN</td>
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### Literature

### Recommended prerequisites
Body Composition and Functions I & II, Sports Medicine

### 4. Study/Examinations
To examine the learning achievement, a written exam (examination, graded) takes place. In it, it will be demonstrated that, in limited time and without aids, questions about the basics of health promotion through exercise as well as the conception and realization of health-promoting physical activities can be answered through one’s own formulations. To examine leadership skills, an exercise performance is provided in addition to the exam. This is considered passed if training content of the health sport is demonstrated correctly in the courses (course work, not graded).

### 5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Christiane</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Peters</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:christiane.peters@tum.de">christiane.peters@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Sport Science in Winter Sports

1. General data

**Title of module**
Sportwissenschaft in einer Wintersportart (German)
Sport Science in Winter Sports (English)

**Module level**
Bachelor degree program

**Module subtitle**
Elective module

**Semester duration**
One semester

**Frequency**
WS

**Language**
German or English

**ECTS**
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

**Targeted learning outcomes**
After successfully completing the module, students will be able:

- to create a sports science requirement profile (conditional, coordinated, technical, tactical and mental) for the selected type of winter sport
- to select specific measures of diagnostics and training to improve performance according to the requirement profile
➢ to perform selected activities of diagnosis, to interpret the results and to derive training measures

**Content**

➢ Creation of a profile of requirements in terms of biomechanical, physiological and psychological aspects in the chosen winter sport
➢ Planning and organization of diagnostic measures based on the requirement profile
➢ Planning and organization of training measures based on the requirements profile and the diagnosis
➢ Conducting diagnostic measures with regard to movement observation, motion analysis and technology mediation
➢ Evaluation of the results obtained from the diagnostic
➢ Assessment of the training measures performed

**Teaching and learning methods**

In the seminars and exercises (small groups), assignments, practical tests and evaluations are deepened by theoretical and practical contributions, such as the application of special diagnostic and training planning in a specific sport, (student presentations, active participation).

The selection of sport opportunities results from the teaching and organizational capacity of the Department of Sport and Health Sciences.

**Courses**

1. LV
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<td>Docent</td>
<td>Dr. Daniel Gärtner</td>
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2. LV
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<td>Name</td>
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<td>2 SWS</td>
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<tr>
<td>Docent</td>
<td>Dr. Daniel Gärtner</td>
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</tbody>
</table>
Literature
is announced in the individual sports groups

Recommended prerequisites
Training & Movement I

4. Study/Examinations
The examination consists of a presentation and ongoing assessment based on questions and tasks in the exercise. Each part of the examination represents one half of the final grade. In the presentation, the methodology, results and the evaluation of results are presented from the measures.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Peter</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Dr. Spitzenpfeil</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:peter.spitzenpfeil@tum.de">peter.spitzenpfeil@tum.de</a></td>
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</tbody>
</table>
Elective module: Sport Communication and Sport Sponsorship

1. General data

Title of module
Sportkommunikation und Sportsponsoring (German)
Sport Communication and Sport Sponsorship (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One

Frequency
WS

Language
German

ECTS
5 ECTS

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to understand and discuss historical developments, current trends and scientific research results from current studies of sport communication as well as sport sponsorship
- to name journalistic, social and economic dimensions of sport communication
to describe forms, objectives and strategies of sports sponsorship

to apply selected fundamental forms of communication for sports media target groups

**Content**

As part of the seminar "Sport communication & sport sponsorship", the following topics will be presented and discussed:

- Historical and current aspects of sport communication and sport sponsorship
- The labor market for different professional fields of sport communication in the mass media, in sports clubs and associations as well as in sports marketing agencies and their requirements.
- Forms, strategies, objectives and target groups of sport sponsorship as a communication policy instrument.
- Studies on sport communicator research, sports media research, sports content research and sports audience research
- Basic standards for the creation of various journalistic presentation forms such as press release, report, interview, headings

**Teaching and learning methods**

Presentations of the seminar topic acquired by independent sources and literature review as part of a PowerPoint presentation by small groups (two to three people), in which the individual performance of each student must be identifiable and assessable.

Writing training as part of creating individual work samples/text

The created work samples are corrected individually in order to suggest specific optimization possibilities for each student.

**Courses**

1. LV

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<td>Docent</td>
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2. LV

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<td>Name</td>
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<td>2 SWS</td>
</tr>
<tr>
<td>Docent</td>
<td>Prof. Michael Schaffrath</td>
</tr>
</tbody>
</table>

**Literature**


Journal articles are posted for specific topics.

**Recommended prerequisites**

Successful participation in the module "Society and Communication"

4. **Study/Examinations**

The examination is in the form of a presentation (graded). Here, a limited content area of a module-topic is referenced.

As part of the practical exercises, different written forms of presentation of sports communication (ungraded) are to be created in a limited time specification.

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Michael</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Apl.-Prof. Dr. Schaffrath</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:michael.schaffrath@tum.de">michael.schaffrath@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Sports Technology

1. General data

Title of module
Sporttechnologie (German)
Sports Technology (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
Winter semester

Language
German

ECTS
5

2. Workload

Contact Hours: 45 hours
Self-study: 105 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:
- to understand the interaction of sports science and engineering for the development and optimization of sport technology.
- to understand the economic importance of sport technology.
to understand fundamentals of the strength of materials and modern manufacturing technologies.

- to understand the concepts of "functionality" and "function" in the context of sports technology and to describe and quantify procedures.

- to understand the function and importance of standards and patents in the field of sports products.

- to understand the term sustainability from "cradle to cradle" in the field of sports technology.

- to apply criteria for evaluating innovations in the area of sports technology.

Content

- The role of sports technology in sport science
- Selected topics in materials science and strength of materials
- Modern construction methods (CAD, FEA, MBS, rapid prototyping)
- Principles of systematic product development
- Standards and patent work in the area of sports technology
- Procedures for evaluating the functionality of sports products
- Sustainability in sports technology
- Innovations in the area of sports technology (trade fair ispo)
- Introduction to working with CATIA

Teaching and learning methods

The module consists of a lecture and an accompanying exercise event.

Lecture: Lecture and presentation. In the presentations, links to selected and available accompanying literature are included in part, through which the substantive discussion of the issues is possible in home study.

Exercise: Single and/or partner work on computer program under guidance; joint development of criteria for innovation evaluation in preparation for attending a trade fair and design of the final report.

Courses

1. LV

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<thead>
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<tbody>
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<td>Docent</td>
<td>Prof. Veit Senner</td>
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2. LV
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<tbody>
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<td>Name</td>
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<tr>
<td>Docent</td>
<td>Prof. Veit Senner</td>
</tr>
</tbody>
</table>

**Literature**
None

**Recommended prerequisites**
None.
The filing of the module represents a prerequisite for a possible application for the TUM Master's program "Ergonomics - Human Factors Engineering".

4. **Study/Examinations**

**Study/Examinations**
The written examination is held in a classroom. In this, it will be demonstrated that, in limited time and without aids, answers to comprehension and relationship questions about the intended learning outcomes can be given. Short computing tasks can also be presented. The exam questions go over the entire lecture material. The answers partly require some personal formulations and partly choosing from given multiple choice answers.

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Last name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veit</td>
<td>Senner</td>
<td><a href="mailto:senner@tum.de">senner@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Experiential Education

1. General data

Title of module
Erlebnispädagogik (German)
Experiential Education (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
WS

Language
German

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After participating in the module, students will be able to

➢ to use experiential learning means in order to achieve the following key skills among the participants of different target groups:
   o teamwork and communication skills
   o perseverance
- creativity and readiness to cooperate
- criticism - and assertiveness

➢ to achieve personality development through experiential learning measures, in which the individual can experience, prove and change
➢ to execute leadership appropriate to the situation in the field through intensive nature experience
➢ to describe evaluation methods and possible applications in terms of these offerings.

**Content**

➢ Fundamentals of Experiential Education
➢ Experiential learning activities with school groups
➢ Experiential learning activities with behavioral problems
➢ Team training with companies
➢ Problem solving with groups
➢ Leisure education
➢ Experiential educationally oriented offers in the sports field of activity
  - Rock climbing
  - Snowshoe and mountain hikes
  - Raft building
  - High and low ropes courses
➢ Development of personality for different target groups

**Teaching and learning methods**

The instruction is in the form of a lecture. Instructional content is illustrated here by PowerPoint presentations.
The lecture is supplemented by two action-oriented exercises, in which the instructional content is worked out, performed and totally reflected upon under guidance individually or in groups.

**Courses**

1. **LV**

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<tbody>
<tr>
<td>Name</td>
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2. LV

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<tr>
<td>Docent</td>
<td>Gudrun Weikert</td>
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3. LV

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<tbody>
<tr>
<td>Name</td>
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</tr>
<tr>
<td>SWS</td>
<td>1</td>
</tr>
<tr>
<td>Docent</td>
<td>Ulrich Eberhardt</td>
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</tbody>
</table>

**Literature**


**Recommended prerequisites**

Module Psychological and Educational Basic Skills

4. **Study/Examinations**

The written examination is held in a classroom. In this, it will be demonstrated that topics about experiential education can be answered in 60 minutes in questions. This is not just about the knowledge of fundamentals and applications of experiential learning, but also about the solution of specific problems and case studies. The answers require one's own formulations.

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Otto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Huber</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:otto.huber@tum.de">otto.huber@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Neural Control of Movement and Neuromechanics

1. General data

Title of module
Neuronale Mechanismen (German)
Neural Control of Movement and Neuromechanics (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
WS

Language
German or English (lecture German or English, seminar English)

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:
➢ to remember the most important structures of the central and peripheral nervous system and to understand functional relationships
to remember the construction and control of the musculature and to understand functional relationships
- to understand fundamental relationships between neural control and motor action
- to know and apply the most important measurement methods in the area of neuroimaging and neuro-mechanics, and to evaluate the results
- to name and discuss international academic publications in the subject area

Content
- Movement control in the central nervous system
- Control and production of movements and forces in the peripheral nervous system and muscle
- Insights into the respective measurement methods
- Presentation of English technical literature
- Functional neuroanatomy of the sensorimotor system,
- Neural correlates of motor control and motor learning,
- Neuroimaging,
- Neurological diseases of the motor system,
- Anatomy and function of the spinal cord and the sensory-motor nerves,
- Neuromuscular anatomy and mechanisms,
- Stimulation methods.

Teaching and learning methods
Multimedia, interactive lecture; practical exercises, seminars

Courses
1. LV

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<tr>
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<td>Name</td>
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<td>Docent</td>
<td>Dr. Waltraud Stadler</td>
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2. LV

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3. LV
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<th>Exercise</th>
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<tbody>
<tr>
<td>Name</td>
<td>Methods of neuroimaging and neuromuscular diagnostics</td>
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<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Prof. Joachim Hermsdörfer, Dr. Waltraud Stadler, NN</td>
</tr>
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</table>

4. LV

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<tr>
<th>Type</th>
<th>Seminar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Topics of the neural mechanisms of movement</td>
</tr>
<tr>
<td>SWS</td>
<td>1</td>
</tr>
<tr>
<td>Docent</td>
<td>Prof. Joachim Hermsdörfer, Dr. Waltraud Stadler, NN</td>
</tr>
</tbody>
</table>

**Literature**

Pinel & Pauli, Biopsychologie, Pearson 2007

Additional literature is announced in the lecture

**Recommended prerequisites**

Module content from semesters 1-3: Kinesiology, biomechanics, body structures, research methods

4. **Study/Examinations**

Module performance is assessed in the form of an oral examination. In this, it will be demonstrated that the connections between neural control and motor action are understood, and that the most important measurement methods in neuroimaging and neuromechanics are known and can be evaluated.

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Joachim</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Hermsdörfer</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:Joachim.Hermsdoerfer@tum.de">Joachim.Hermsdoerfer@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Scientific work

1. General data

**Title of module**
Anwendung Sportwissenschaftlicher Methoden (German)
Applied Methods of Sports Science (English)

**Module level**
Bachelor degree program

**Module subtitle**
Required

**Semester duration**
One semester

**Frequency**
WS

**Language**
German

**ECTS**
5

2. Workload
Contact Hours: 30 hours
Self-study: 120 hours
Total: 150 hours

3. Description

**Targeted learning outcomes**
After participating in the module, students will be able:

- to recall sports science research methods and to describe specific research approaches and statistical relationships
- to implement theoretical fundamental knowledge in practical projects (issues)
- to apply sports science and measurement methods for evaluating the required IT programs.
Content
Sports science measurement methods: Research methods in theory and practice.
Sports science research methods/statistical software: Examples of the application of experimental design and statistical analysis.

Teaching and learning methods
PowerPoint slides, exercise.

Courses

1. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Seminar</th>
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<tbody>
<tr>
<td>Name</td>
<td>Applied Methods of Sports Science</td>
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<tr>
<td>Docent</td>
<td>NN</td>
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</table>

Literature
Riehle H (ed.) Biomechanik als Anwendungsforschung, Transfer zwischen Theorie und Praxis Czwalina, Hamburg 2004

Required prerequisites
Successful completion of the modules Research Methods I and II.

4. Study/Examinations
Credit points are awarded according to successful personal project in small groups (5-8 students each) and according to written report with presentation of experimental design and analysis, statistical analysis and interpretation.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Ansgar</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Schwirtz</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:Ansgar.Schwirtz@tum.de">Ansgar.Schwirtz@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Sports Law

1. General data

Title of module
Sportrecht (German)
Sports Law (English)

Module level
Bachelor degree program

Module subtitle
Required module

Semester duration
One

Frequency
SS

Language
German

ECTS
4

2. Workload

Contact Hours: 60 hours
Self-study: 60 hours
Total: 120 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to remember and understand important fundamentals and relevant topics of sports law and media law.
- to name and classify important laws and judgments.
- to recognize and evaluate legally relevant problem areas for professional activities in sports clubs, sports associations and media.
Content
The two lectures will provide students with the principles of sports law and media law. These include
- Corporate and association Law
- Sports jurisdiction
- Liability law in sports
- Legal classification and evaluation of sports contracts
- Marketing law in sports
- Legal framework for sports betting
- Copyright
- Personal rights of athletes
- Sport relevant laws of the press, radio and multimedia law
- Judgments of the Federal Constitutional Court

Teaching and learning methods
Lecture as a PowerPoint presentation, video clips, photo material, study of judgments, legal texts and literature.

Courses
1. LV

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<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
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<tbody>
<tr>
<td>Name</td>
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<tr>
<td>Docent</td>
<td>Prof. Andreas Liegl</td>
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2. LV

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<tr>
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<tr>
<td>Name</td>
<td>Media Law</td>
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<tr>
<td>SWS</td>
<td>2 SWS</td>
</tr>
<tr>
<td>Docent</td>
<td>Prof. Michael Schaffrath</td>
</tr>
</tbody>
</table>

Literature

**Recommended prerequisites**
Modules Society and Communication and Sports Management

4. **Study/Examinations**
In this, students will demonstrate that they can classify relevant laws and judgments, and can discuss relevant legal problem areas in the context of possible subsequent professional activities.

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Michael</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Apl.-Prof. Dr. Schaffrath</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:michael.schaffrath@tum.de">michael.schaffrath@tum.de</a></td>
</tr>
</tbody>
</table>
Module: Educational Competence

1. General data

Title of module
Vermittlungskompetenz (German)
Educational Competence (English)

Module level
Bachelor degree program

Module subtitle
Required module

Semester duration
One semester

Frequency
SS

Language
German

ECTS
4

2. Workload

Contact Hours: 45 hours
Self-study: 75 hours
Total: 120 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to project basic (sport) educational terms, concepts and theories on teaching-learning situations
- to justify, apply and critically reflect upon communication processes
- to make justified methods and media decisions for teaching-learning situations
to process and present technical information and represent a variety of media

Content

Concepts and theories of teaching; fundamentals and recent developments in sport didactics; movement culture as an educational medium; the dual mission of training sports instruction; sport didactics of fields of motion.

Didactic principles; delivery forms of general education; delivery forms of movement education; multimedia learning techniques; pedagogical and didactic use of small games; innovative forms of movement in sport.

Teaching and learning methods

The module consists of one lecture with activating components and one seminar. The content of the module is conveyed through lectures and presentations. In the seminar, students prepare the topic units and practical exercises using the basic literature before and after.

Courses

1. LV

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<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
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<tbody>
<tr>
<td>Name</td>
<td>Fundamentals of Teaching</td>
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2. LV

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<td>Name</td>
<td>Educational Competence</td>
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</table>

Literature


Recommended prerequisites

None

4. Study/Examinations
In this, it will be demonstrated that, in limited time and without aids, educational processes can be theoretically justified, applied and critically reflected upon and learning styles or learning modules can be created. The answers require both independent formulations as well as choosing from among multiple choice answers.

5. **Responsible for module**

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<tr>
<th>First name</th>
<th>Peter</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Dr. Gröpel</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:peter.groepel@tum.de">peter.groepel@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Applied Health Promotion and Exercise

1. General data

Title of module
Gesundheitsförderung und Bewegung (German)
Exercise and Health Promotion (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
SS

Language
German or English

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to develop a preventative oriented concept of movement for a given topic from the context of health sports and to implement it into practical tasks
- to lead a group in the realization of movement tasks.
Content

- Principles for designing health-oriented exercise programs
- Methodological and didactic aspects;
- Group leader behavior

Teaching and learning methods

The exercise events occur in action-oriented form of instruction. The instructional content is demonstrated here, in individual self-realization under guidance or developed in the group and with the aid of feedback, in part, analyzed with video analysis. The acquired knowledge and skills on the example of Nordic walking/yoga are applied in practice in a movement project developed in small groups as part of a project day with a real audience (excursion). This is to encourage students to apply and evaluate their knowledge, skills and abilities in topics and target groups and to delve into them through study of literature.

Courses

1. LV

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<tr>
<th>Type</th>
<th>Exercise</th>
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<td>Name</td>
<td>Applied Health Promotion through Exercise</td>
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<td>Docent</td>
<td>Peters, Necker, Giegerich, Reiner, Kern, NN</td>
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2. LV

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<th>Type</th>
<th>Exercise</th>
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<tbody>
<tr>
<td>Name</td>
<td>Health promotion in different settings, Nordic Walking and yoga</td>
</tr>
<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Peters, Necker, Giegerich, Reiner, Kern, NN</td>
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</tbody>
</table>

Literature


Recommended prerequisites

The module Applied Health Promotion and Exercise is a constructive module and assumes participation in the module Health Promotion and Exercise (5th semester).
4. **Study/Examinations**
To examine learning achievement, a practical teaching test is to be performed with a written composition. In this examination, it will be demonstrated that an exercise program beneficial to health can be sensibly planned in a given time, scientifically based and be oriented to specific target groups. The evaluation (grading) of the examination is performed by a weighting of written paper and teaching sample (1/3 to 2/3).

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Christiane</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Dr. Peters</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:christiane.peters@tum.de">christiane.peters@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Sport Science in a Summer Sport

1. General data

Title of module
Angewandte Sportwissenschaft II (German)
Applied Sport Science II (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
SS

Language
German or English

ECTS
5

2. Workload

Contact Hours: 120 hours
Self-study: 30 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to create a sports science requirement profile (conditional, coordinated, technical, tactical, and mental) for the selected type of summer sport
- to select specific measures of diagnostics and training to improve performance according to the requirement profile
to perform selected activities of diagnosis, to interpret the results and to derive training measures

**Content**

- Creation of a profile of requirements in terms of biomechanical, physiological and psychological aspects in the chosen winter sport
- Planning and organization of diagnostic measures based on the requirement profile
- Planning and organization of training measures based on the requirements profile and the diagnosis
- Conducting diagnostic measures with regard to movement observation, motion analysis and technology mediation
- Evaluation of the results obtained from the diagnostic
- Assessment the training measures performed

**Teaching and learning methods**

In the seminars and exercises (small groups), assignments, practical tests and evaluations are delved into, through theoretical and practical contributions, such as the application of special diagnostic and training planning in a specific sport, (student presentations, active participation)

The selection of sport opportunities results from the teaching and organizational capacity of the Department of Sport and Health Sciences.

**Courses**

1. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Seminar</th>
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<tbody>
<tr>
<td>Name</td>
<td>Requirement profile and training planning</td>
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<tr>
<td>SWS</td>
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</tr>
<tr>
<td>Docent</td>
<td>Dr. Daniel Gärtner</td>
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</table>

2. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Exercise</th>
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</thead>
<tbody>
<tr>
<td>Name</td>
<td>Applied Sports Science Diagnostics and Training Planning</td>
</tr>
<tr>
<td>SWS</td>
<td>2 SWS</td>
</tr>
<tr>
<td>Docent</td>
<td>Dr. Daniel Gärtner</td>
</tr>
</tbody>
</table>
Literature
is announced in the individual sports groups

Recommended prerequisites
Training & Movement I

4. Study/Examinations
The examination consists of a presentation and the ongoing assessment based on questions in the exercise. Both parts of the exam are each half in the final grade. In the presentation, the methodology, results and the evaluation of results are presented from the measures.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Peter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Dr. Spitzenpfeil</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:peter.spitzenpfeil@tum.de">peter.spitzenpfeil@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Public Relations for Sports Organizations

1. General data

Title of module
Sport-PR für Vereine, Verbände, Unternehmen (German)
Public Relations for Sports Organizations (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One

Frequency
WS

Language
German

ECTS
5 ECTS

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students are able to design their own sports PR campaigns. In addition, they can even prepare or apply specific different PR tools (e.g. press releases, press conference).
Content
Development of sports PR campaigns:
- PR management process
- PR models and PR theories
- Functions and fields of modern sports PR
- Methods of formative and summative PR-controlling in sports
- Requirement profiles for the profession of sports PR in clubs, associations, agencies and companies.
- Current labor market information and labor market developments
- Empirical studies for sports PR
- Basic forms of presentation of modern sports publicity (e.g., PR-communication, newsletter, press conference, fliers, folders and the design of a club homepage).

Teaching and learning methods
In the seminar, presentations are held, in which the appropriate seminar topics are conveyed through independent sources and literature studies by means of a PowerPoint presentation with the integration of multimedia elements. Depending on the number of participants in the seminar, these presentations are held by individuals or in small groups of a maximum of two to three students, where the individual performance must be seen and evaluated in the small group work.

In the exercise, basic forms of presentation of sports publicity are practically applied. Here, students will learn individually specific stylistic devices in the individual course units.

Courses
1. LV

<table>
<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Name</td>
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<tr>
<td>SWS</td>
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<td>Docent</td>
<td>Prof. Michael Schaffrath</td>
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2. LV

<table>
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<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Name</td>
<td>Sports PR tools</td>
</tr>
<tr>
<td>SWS</td>
<td>2 SWS</td>
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<tr>
<td>Docent</td>
<td>Prof. Michael Schaffrath</td>
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</tbody>
</table>
Literature

Journal articles are posted for specific topics.

Recommended prerequisites
Module "Sport Communication"

4. Study/Examinations
The examination is in the form of a presentation. For this, the developed PR campaign will be presented (or parts thereof). As part of the ungraded practical exercises, various sports PR tools are to be created.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Michael</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Apl.-Prof. Dr. Schaffrath</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:michael.schaffrath@tum.de">michael.schaffrath@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Top Level Sports at Youth Level

1. General data

Title of module
Nachwuchs-Leistungssport (German)
Top Level Sports at Youth Level (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
SS

Language
German or English

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to apply theories of expertise research to the analysis of associational young talent delivery systems
- to perform squad structural analyses for associational young talent delivery systems
to assess and evaluate associational framework training plans
- to conduct empirical studies on the practical implementation of associative framework training plans

**Content**

- Ongoing discussion of talent research;
  - Expertise research vs. talent research
  - Genetics vs. socialization
- Overview of the methods of squad controlling analyses; et al.
  - Transitional structures between different squad levels
  - Effectiveness dimensions for talent development systems
- Application of methods of squad controlling analyses
  - Types of sports with DOSB squad structure
  - Types of sports with age-related young squads
- Methods of detecting age-specific game structures in team sports; et al.
  - Perturbation structure
  - Episode structure
- Application of methods for surveying age-specific game structures
  - In the area of talent selection
  - In the area of training management

**Teaching and learning methods**

Theoretical knowledge in the field of talent research and career development are obtained on the basis of mastering relevant articles (especially the English-language literature) by which practical sport phenomena are analyzed. Personal practical sports experiences are reflected upon and interpreted with the aid of the developed theories.

The specific methodological knowledge in the field of talent research are taught on the basis of surveys, the calculations are demonstrated by examples. Personal calculations are performed in group work.

Independent data acquisition occurs in the following in a defined period of time (e.g., based on web pages or by practice contact). Based on the theoretical findings, conclusions are drawn and the results presented.

**Courses**

1. LV

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<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Name</td>
<td>Talent research</td>
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<tr>
<td>Docent</td>
<td>Prof. Dr. Martin Lames</td>
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</table>
2. LV

<table>
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<tr>
<th>Type</th>
<th>Seminar</th>
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<tbody>
<tr>
<td>Name</td>
<td>Youth sports</td>
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<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Prof. Dr. Martin Lames</td>
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</table>

**Literature**

**Recommended prerequisites**
Psychological and Educational Basic Skills, Training Scientific Expertise, Training and Exercise I + II

4. **Study/Examinations**
Project work in the area of talent research/young athletes is to be performed as a performance examination. Data will be independently acquired in a definite time period following the phases performed during the seminar and will be analyzed and classified according to the developed methods. The report to be composed should be about 15 pages.

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Martin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name</td>
<td>Prof. Dr. Lames</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:martin.lames@tum.de">martin.lames@tum.de</a></td>
</tr>
</tbody>
</table>
Elective module: Disabled Sports

1. General data

Title of module
Basiskompetenz Behindertensport (German)
Principles of Sports for People with a Disability (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
SS

Language
German or English

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

- to describe manifestations and their pathogenesis in selected disabilities (sensory, physical, mental disability).
- to work out and implement target-group suitable movement offerings considering the nature and extent of the disability as well as the age of the practitioner.
to use and interpret sports science research methods in the context of disability performance sports.

Content

- Concepts and models in the context of disability and disability sport;
- Pathogenesis of selected physical, sensory and intellectual disabilities;
- Development, objectives and content of disability sport;
- Didactics and methodology of sports with people with disabilities;
- Sport-specific rules;
- Fundamentals of classification and its implementation in sports;
- Addressing the needs of persons with disabilities with regard to general support and guidance
- Assistive devices

Teaching and learning methods

In the seminar, content is presented in the form of a lecture as well as interactively developed with the students. Instructional content is illustrated here in part by computer-animated presentations as well as movement sequences. There is also work in small groups. The seminar is complemented by an action-oriented exercise in which teaching content is developed and analyzed in self-realization individually and under guidance in the group. This is to encourage students to apply knowledge acquired in the seminar on topics and target groups and to delve into them through the study of literature. The design of an exercise program or the application of sports science methods with a real target group in the context of disabled sports is provided in small group work in project form (project seminar) and is complemented by an internship/field trip. This gives students an insight into a realistic target group-specific implementation of the curriculum into practice.

Courses

1. LV

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<th>Type</th>
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<td>Name</td>
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<tr>
<td>Docent</td>
<td>Dr. Christiane Peters</td>
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</table>
2. LV

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<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Name</td>
<td>Didactics &amp; methodology of sports with people with disabilities</td>
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<tr>
<td>SWS</td>
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<td>Docent</td>
<td>Dr. Christiane Peters, NN</td>
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3. LV

<table>
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<th>Type</th>
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<tbody>
<tr>
<td>Name</td>
<td>Disability sports (project seminar)</td>
</tr>
<tr>
<td>SWS</td>
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<tr>
<td>Docent</td>
<td>Dr. Christiane Peters, NN</td>
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</tbody>
</table>

**Literature**


**Recommended prerequisites**

Sports Medicine

4. Study/Examinations

To examine the learning achievement, graded homework is to be written. In this written composition, students will demonstrate, on the one hand, that they have acquired the fundamentals of sports with people with disabilities. On the other hand, they should show that they are able to work on an appropriate task in a structured manner in the context of disability sports, to work out the application in a targeted manner as well as explain the target group-specific didactic, organizational and communicative features when creating a training plan in the sport practice environment.

5. Responsible for module

<table>
<thead>
<tr>
<th>First name</th>
<th>Christiane</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Peters</td>
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<tr>
<td>Email</td>
<td><a href="mailto:christiane.peters@tum.de">christiane.peters@tum.de</a></td>
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</tbody>
</table>
Elective module: Outdoor Sports

1. General data

Title of module
Outdoorsport (German)
Outdoor Sports (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
SS

Language
German

ECTS
5

2. Workload

Contact Hours: 60 hours
Self-study: 90 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:
- to understand different outdoor sports in terms of risk management, group management, orientation, organizational and legal aspect.
- to apply technical and didactic knowledge in selected types of sports.
- to plan and perform outdoor events for different audiences.
Content

- Fundamentals of:
  - Orientation in the field with technical equipment
    - Map/compass/altimeter
    - GPS
  - Group leadership in the field
  - Organization of outdoor events
    - in the area of mountain sports
    - in the field of cycling/mountain biking
    - in the field of water sports (canoe/kayak)
  - Risk/Security Management
  - Rescue chain under outdoor conditions
  - Legal aspects in outdoor sports
- Self-realization of the chosen type of sport in terms of
  - Exercise observation and analysis
  - Technology mediation
  - Planning and organization

Teaching and learning methods

The module consists of a seminar and an exercise that is taken in a selected sport. In the seminar, the instructional content, outdoor basics, is presented through computer-animated presentation and partially delved into through group work. In the action-oriented exercise, instructional content is individually developed, performed and jointly reflected upon in self-realization under guidance. The seminar and the exercise are held in block courses for organizational reasons, partly outside the university grounds. Students are encouraged to study the literature and the substantive discussion of the topics.

Courses

1. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Seminar</th>
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<tbody>
<tr>
<td>Name</td>
<td>Outdoor Basics</td>
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<td>SWS</td>
<td>1</td>
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<tr>
<td>Docent</td>
<td>Otto Huber, Gudrun Weikert</td>
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2. LV

<table>
<thead>
<tr>
<th>Type</th>
<th>Exercise</th>
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<tbody>
<tr>
<td>Name</td>
<td>Sport-specific aspects of selected outdoor sports</td>
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</table>
SWS 3
Docent Otto Huber, Gudrun Weikert

**Literature**
Additional literature announced in the individual sports groups

**Recommended prerequisites**
Basic knowledge in the chosen sport is required
The following modules are prerequisites: Training & Movement I, II

4. **Study/Examinations**
The examination is provided in the form of a lecture/training exercise as part of the exercise. Outdoor-specific issues, problems and their solutions will be presented here and be performed under didactic instruction. In addition to the quality of the presentation, the plan of action and organization will be assessed accordingly.

5. **Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Otto</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Huber</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:otto.huber@tum.de">otto.huber@tum.de</a></td>
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</tbody>
</table>
Elective module: Consumer Behavior in Sport

1. General data

Title of module
Konsumentenverhalten im Sport (German)
Consumer Behavior in Sport (English)

Module level
Bachelor degree program

Module subtitle
Elective module

Semester duration
One semester

Frequency
SS

Language
English

ECTS
5

2. Workload

Contact Hours: 45 hours
Self-study: 105 hours
Total: 150 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students will be able:

➢ to remember basic theories of consumer behavior and to understand and apply to the behavior of consumers in sports markets
to remember and understand measurement models of consumer behavior in sports, to apply to current issues in sports management, and make behavioral predictions on the basis of analyses

- to remember, understand and apply social techniques of consumer behavior (e.g., personal consulting, advertising) for the satisfaction of consumer needs in the context of individual decision-making processes

- to remember and understand relevant environmental influences of consumer behavior and to deal with behavioral science patterns of explanation in conjunction in order to be able to analyze, evaluate and develop environments which increase the sales of sports products and services.

**Content**

Contents are current topics from the field of consumer behavior with respect to sports. This includes, for example, the following topics:

- Behavioral approaches marketing of sport and marketing through sport
- Internal and external environment of sports consumers
- Purchasing decisions kinds of sports services and products
- Activating and cognitive processes and their importance in sports
- Values and lifestyles in sport consumer behavior
- Audience and fan loyalty in sports
- Theories and methods of measurement sports sponsorship.

**Courses**

1. **LV**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lecture</th>
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<tbody>
<tr>
<td>Name</td>
<td>Consumer Behavior in Sport</td>
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<td></td>
<td>(Consumer Behavior in Sport)</td>
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<tr>
<td>SWS</td>
<td>2 SWS</td>
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<tr>
<td>Docent</td>
<td>Prof. Jörg Königstorfer</td>
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2. **LV**

<table>
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<tr>
<th>Type</th>
<th>Exercise</th>
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<tbody>
<tr>
<td>Name</td>
<td>Consumer Behavior in Sport Markets</td>
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<tr>
<td>Docent</td>
<td>Sabrina Lucke</td>
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**Literature**

**Teaching and learning methods**
The module consists of a lecture and an exercise. In the lecture, the necessary knowledge is provided by presentations of the lecturers. Students are encouraged to study the literature and the substantive discussion of the topics. In the exercise, students work on current challenges in sports economics and sports management in the context of the behavior of sports consumers. Using case studies, they analyze and evaluate concepts in sports management and sports economics. They also develop relevant strategies for solving problems from the perspective of providers in sports.

**Recommended prerequisites**
Sport Management

**4. Study/Examinations**
The written examination is held in a classroom. In this, it will be demonstrated that questions about basics of consumer behavior in sports can be answered in a limited time and without aids. Questions are openly posed and graded on whether students can remember, understand and apply relevant theories, measurement models and social techniques of consumer behavior. In addition, via the creation of a poster (as usual with respect to conferences), it is determined whether students can analyze, evaluate and develop environments with the help of the knowledge of consumer behavior, and promote the sales of sports products and services.

**5. Responsible for module**

<table>
<thead>
<tr>
<th>First name</th>
<th>Jörg</th>
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<tbody>
<tr>
<td>Last name</td>
<td>Prof. Königstorfer</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:joerg.koenigstorfer@tum.de">joerg.koenigstorfer@tum.de</a></td>
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Module: Bachelor's thesis

1. General data

Title of module
Bachelorarbeit (German)
Bachelor's thesis (English)

Module level
Bachelor degree program

Module subtitle
Thesis

Semester duration
One semester

Frequency
SS

Language
German or English, abstract in English

ECTS
12

2. Workload

Self-study: 360 hours
Total: 360 hours

3. Description

Targeted learning outcomes
After successfully completing the module, students are able to independently work out, plan, perform, and evaluate a scientific question in the field of health science, and present the results according to international scientific standards.

Content
Students become acquainted with a scientific topic and hypothesis of health science under guidance. They can firstly perform a quantitative or qualitative study and evaluate these with the appropriate procedures and present the results of both content and form in accordance with international standards.
Prerequisites
120 credits of compulsory modules

4. Study/Examinations
In addition to the prepared composition, the thesis work consists of a lecture in which the student must answer questions about the presented work.

5. Responsible for module

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