Human Movement Sciences: Sport, Exercise and Health (MSc)

Vrije Universiteit Amsterdam - Faculteit der Bewegingswetenschappen - M Human Movement Sciences - 2014-2015

The one-year (60EC) programme Human Movement Sciences: Sport, Exercise & Health aims to teach students to collect and develop knowledge and understanding of human movement and to be able to apply this in the sports-, exercise- and health-related fields. The programme comprises four main tracks: biophysics in health & rehabilitation; health & lifestyle interventions; physiology in sport & health; and sport psychology. Given the nature of the study, exercise will form a key part of all tracks. The tracks are not strictly divided programmes and overlaps and switches to compose the ideal programme for each individual student are absolutely possible.

Next to the four tracks, the programme offers a limited number of students (we have approximately 15 -20 places available each year), the opportunity to acquire an accreditation for teaching in Higher Education. The programme “Teaching in Higher Education” amounts to 24 EC, which can partially be incorporated into the regular programme. The programme also intends to establish links to certifications in health and exercise such as those the recognized certifications of the American College of Sports Medicine (Registered Clinical Exercise Physiologist®, Exercise Specialist® (ES) en ACSM Health/Fitness Instructor®).

The MSc diploma, when combined with a small number of additional courses will allow students acces to the Postgraduate programme for Practical Sports Psychologist. This Postgraduate programme will take approximately one year (full time) and leads to accreditation as “Sportpsycholoog Vereniging voor Sportpsychologie in Nederland (r)”

Overview of the programme

(For more information about the courses, please see below)

Admission to the Master’s programme
Students with a bachelor’s degree in Human Movement Sciences (either from VU University or the RUG) or Health Sciences with a major Human Movement Sciences (UM) or Medical Sciences with a major Human Movement Sciences (Radboud Universiteit) have direct access to the master’s programme HMS.
The only condition is that the student has made a rough personal planning for the Master’s Programme that has been approved by the Examination Board. Bachelors of studies other than Human Movement Sciences need to meet the requirements as mentioned on the website.

The Master's Programme only starts in September. Students from both our own Bachelor's programme and from other programmes are not allowed to start the Master's programme during the academic year.

Master Programme for students with a Bachelor degree other than Human Movement Sciences
For detailed information on admission requirements and procedures for students with a Bachelor degree other than Human Movement Sciences wanting to follow the Master’s Programme, we refer to this website.

The Master’s Programme for these students normally is consistent with the regular Master’s Programme.

Most students from other programmes than Human Movement Sciences have to follow a Premaster’s Programme before entering the Master’s Programme. Depending on the nature of the Bachelor degree of the student, the elements of the Premaster Programme are determined. The study load for the Premaster Programme may vary from 6 to a maximum of 30 credits. If more than 30 credits ar required for admission to the Master's programme, students have to follow a maximum of two courses (12 credits) extra. A special fee of 63,50 euro per credit is charged for these additional courses.

Optional courses
The student can use the Optional credits for:
- Following one or more master courses of the other track or optional courses within the programme, or selected courses from the Research Master’s Programme (note: entry for these courses might be limited);
- Courses from the Bachelor’s programme, provided that the total programme comprises at least 51 EC from the master’s programme.
- Elements of other master’s programmes, either of VU University or another University, provided that the total programme comprises at least 51 EC from the master’s programme.
- Following a Teacher Training Course. Please note that because the Teacher Training Course is 24 EC, it will result in an extended duration of the study. See www.fbw.vu.nl for the Teacher Training Course.
- Participation in one of the SOCRATES-Programmes: Exercise and Sport Psychology, Adapted Physical Activity or Development of Motor Control and Coordination. This will probably lead to extended study duration as well. It is possible that more opportunities will be present in the near future. For more information contact international-and/or

master coordinator.
-Short-literature review of 6 EC.
-Extension of the internship with 6 credits (total 30 credits).
-Practical internship of 6 EC.

The student submits his free choice elements formally to the Examination Board by means of an approval form. The approval form must be signed by the study advisor.

Approval Form
Although the students are free in choosing elements for the Optional credits, the faculty has certain requirements as to the size and the level of the chosen elements. The Free Subject Choice should, in theory, only consist of study components from the Master's programme. Study components from the Bachelor's programme for the Free Subject Choice are only applicable when they are relevant to the Master's programme. In order to establish this, the student needs to fill out the Approval Form with the element content and rough planning, which has to be signed by the study advisor for approval. In order to prevent disappointments we advise the students to hand in their Approval Forms as early as possible.

Inhoudsopgave

Track Biophysics Health & Rehabilitation

Vakken:

Naam	Periode	Credits	Code
Applied Biomechanics	Periode 2	6.0	B_APPLBIOMEC
Behavioral Concepts in Human Movement Sciences	Periode 1	3.0	B_BEHCONCEPT
Biophysical Concepts in Human Movement Sciences	Periode 1	3.0	B_BIOCONCEPT
Clinical Exercise Physiology	Periode 3	3.0	B_CLINEXERC
Coordination Dynamics: Prin. Clin. Appl.	Periode 2	6.0	B_CLINCORDYN
Normal and Abnormal Motor Development	Periode 1	3.0	B_MOTORDEVEL
Rehabilitation: Restoration of Mobility	Periode 1	3.0	B_REHABMOB

Docentenopleiding FBW

Vakken:

Naam	Periode	Credits	Code
Teacher Training at the Upper Secondary Level	Ac. Jaar (september)	24.0	B_DOCENTHBO

HMS1 Optional Courses

Vakken:

Naam	Periode	Credits	Code
3D-Kinematics	Periode 4	3.0	B_3DKIN
Applied Biomechanics	Periode 2	6.0	B_APPLBIOMEC
Clinical Exercise Physiology	Periode 3	3.0	B_CLINEXERC
Coordination Dynamics: Prin. Clin. Appl.	Periode 2	6.0	B_CLINCORDYN
Current Issues in Sport and Exercise Psychology	Periode 1	6.0	B_CURRISSUES
Electromyography	Periode 5	3.0	B_ELECTROMYO
Entrepreneurship in Human Movement Sciences	Periode 5	6.0	B_ENTREPREN
Exercise and Health	Periode 3	3.0	B_EXERHEALTH
Fatigue, Aging and Disuse	Periode 2	6.0	B_FATIGUE

Health and Society	Periode 6	3.0	B_HEALTHSOC
Intermuscular Load Sharing	Periode 6	3.0	B_INMUSCLOAD
Neurorehabilitation in the Context of Movement Sciences	Periode 4	3.0	B_NEURREHMS
Normal and Abnormal Motor Development	Periode 1	3.0	B_MOTORDEVEL
Perception for Action	Periode 4	3.0	B_PERCACTION
Perceptual-motor Learning	Periode 2	6.0	B_PERCML
Practical Internship	Ac. Jaar (september)	6.0	B_PRACINTERN
Rehabilitation: Restoration of Mobility	Periode 1	3.0	B_REHABMOB
Short Literature Review	Ac. Jaar (september)	6.0	B_SLR
Special Topics in Sports Engineering	Periode 5	3.0	B_SPTOPICS
Sport and Society	Periode 5	3.0	B_SPORTSOC
Sport Psychology: from Evidence to Application	Periode 2	6.0	B_SPORTPSYEV
Statistics for Experimental Research	Periode 4	3.0	B_STATEXPRES
Studentbegeleiding	Ac. Jaar (september)	6.0	B_STDBEG
Talent Identification and Development	Periode 3	3.0	B_TALDEVEL
Teacher Training at the Upper Secondary Level	Ac. Jaar (september)	24.0	B_DOCENTHBO

Track Health & Lifestyle Interventions

Vakken:

Naam	**Periode**	**Credits**	**Code**
Behavioral Concepts in Human Movement Sciences	Periode 1	3.0	B_BEHCONCEPT
Biophysical Concepts in Human Movement Sciences	Periode 1	3.0	B_BIOCONCEPT
Coordination Dynamics: Prin. Clin. Appl.	Periode 2	6.0	B_CLINCORDYN
Exercise and Health	Periode 3	3.0	B_EXERHEALTH
Normal and Abnormal Motor Development	Periode 1	3.0	B_MOTORDEVEL
Perceptual-motor Learning	Periode 2	6.0	B_PERCML
Rehabilitation: Restoration of Mobility	Periode 1	3.0	B_REHABMOB
Sport Psychology: from Evidence to Application	Periode 2	6.0	B_SPORTPSYEV

HMS1 Obligatory Courses

Vakken:

Naam	Periode	Credits	Code
Behavioral Concepts in Human Movement Sciences	Periode 1	3.0	B_BEHCONCEPT
Biophysical Concepts in Human Movement Sciences	Periode 1	3.0	B_BIOCONCEPT
Research Internship	Ac. Jaar (september)	21.0	B_RI
Writing and Designing a Research Proposal	Periode 3	3.0	B_WRITPROP

Track Physiology in Sport & Health

Vakken:

Naam	Periode	Credits	Code
Applied Biomechanics	Periode 2	6.0	B_APPLBIOMEC
Behavioral Concepts in Human Movement Sciences	Periode 1	3.0	B_BEHCONCEPT
Biophysical Concepts in Human Movement Sciences	Periode 1	3.0	B_BIOCONCEPT
Clinical Exercise Physiology	Periode 3	3.0	B_CLINEXERC
Energy Flow Models	Periode 1	3.0	B_ENERFLOW
Fatigue, Aging and Disuse	Periode 2	6.0	B_FATIGUE
Maximal Neuromuscular Performance	Periode 1	3.0	B_MAXNEUR

Track Sport Psychology

Vakken:

Naam	Periode	Credits	Code
Behavioral Concepts in Human Movement Sciences	Periode 1	3.0	B_BEHCONCEPT
Biophysical Concepts in Human Movement Sciences	Periode 1	3.0	B_BIOCONCEPT
Current Issues in Sport and Exercise Psychology	Periode 1	6.0	B_CURRISSUES
Perceptual-motor Learning	Periode 2	6.0	B_PERCML
Sport Psychology: from Evidence to Application	Periode 2	6.0	B_SPORTPSYEV

Talent Identification and Development	Periode 3	3.0	B_TALDEVEL

3D-Kinematics

Vakcode	B_3DKIN (900632)
Periode	Periode 4
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. H.E.J. Veeger
Examinator	prof. dr. J. Harlaar
Docent(en)	prof. dr. H.E.J. Veeger, prof. dr. J. Harlaar
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	500

Doel vak
The student is capable to:
• Define and calculate local joint coordinate systems;
• use and understand different calibration methods and their limitations;
• translate technical motion descriptions into clinically relevant units;
• apply the above to experimental data;
• interpret and comment on methods as described in the literature.

Inhoud vak
In this course students are introduced to the fundamentals of three-dimensional kinematics, as well as the (more or less) standard application methods.
The course will comprise three separate blocks focusing on
1. the definition and use of local coordinate systems in the calculation of osteokinematics;
2. the use of technical marker sets as well as the practical implications of data processing, especially correcting for missing markers and;
3. the calculation procedures for obtaining helical axes, needed for the definition of functional axes-based coordinate systems

Onderwijsvorm
Lectures, computer practicals and tutorials

The three computer practicals are linked to in-term assessments. Each practical will contribute for 15% to the final score.

Toetsvorm
- two in-term tests on calculation skills, partially exempting for exam
- final test on calculation skills + literature
- score: 3 x 20% for calculation questions (one for each block)
40% for essay question
above 100% = 9/10
- 1/10 for professional conduct (participation assignment hand-in)

Literatuur

Relevant papers will be listed in Blackboard.
A useful source is the book by Zatsiorsky (Zatsiorsky, Valdimir M., Kinematics of Human Motion. Champaign, Illinois: Human Kinetics, 1st edition, 1998. ISBN 0-880110767-5), which will be used as reference material.

Vereiste voorkennis
This course requires proficiency in Matlab and matrix calculation. If there is a deficiency related to Matlab skills, students are strongly advised to take the TUE web-based matlab course that can be found at http://www.imc.tue.nl/
The BSc course “Mechanische Analyse …” is advised.

Overige informatie
The maximum number of participants in this course is limited to 40.

Applied Biomechanics

Vakcode	B_APPLBIOMEC ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. S.M. Bruijn
Examinator	dr. S.M. Bruijn
Docent(en)	dr. S.M. Bruijn
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	500

Doel vak
In this course, students will upgrade their mostly 2D biomechanical knowledge to the 3D world and they will learn to apply this new knowledge to perform biomechanical analyses in the context of Sport and Health.
Students will learn to analyze laboratory measurements using a 3D inverse dynamics model. Furthermore, they will learn how to work with more simple measurement techniques, such as accelerometers found in phones. Students will also learn how these complex and simple measurement tools can be applied in biomechanical research in both the laboratory and in field settings. Lastly, students will learn to choose methods that are adequate and efficient for a given problem; in other words; what are the most efficient ways to analyze a given situation, and at what cost (i.e. decrease in precision) does this come?

Inhoud vak
Every week consists of lectures, Matlab practicals and workgroups. During the lectures the theory will be explained. During the Matlab practicals, the biomechanical theory will be applied to analyze different applied research questions. Finally, during the workgroups, you will discuss and present on how to best tackle a research question. Every week, the motion to be analyzed will become more complex (few segments à full-body).
Measurement using the following systems will be covered in this course:
• Laboratory grade 3d motion/force registration
• Simple wearable accelerometers

The analysis of the following 3D variables will be covered in the course:
• Joint angles
• Joint moments
• Energy
• Angular momentum

Onderwijsvorm
21 hours of Lectures
36 hours of practicals
110 hours of self-study (preparing lectures, Writing assignments etc)

Toetsvorm
Weekly practical report + final examination

Literatuur
Will appear on blackboard

Vereiste voorkennis
It is recommended to have completed the following courses:
• Biomechanica (B_BM)
• (2D) Mechanische analyse (B_MECHAN)
• Meten van Fysische grootheden (B_METENVANFG)
Students should have sufficient Matlab experience (see courses above) since all biomechanical modeling will be done with this program.

Behavioral Concepts in Human Movement Sciences

Vakcode	B_BEHCONCEPT (900662)
Periode	Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. J.B.J. Smeets
Examinator	prof. dr. J.B.J. Smeets
Docent(en)	prof. dr. P.J. Beek
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak
The student is able to describe course aims in formal format, divided in the categories:
- reporting the key behavioral concepts in contemporary Human Movement Science;
- applying these concepts in describing research outcomes;
- judging the (dis)advantage of using a concept in a particular situation.

Inhoud vak
Human movement is a complex behavior. To interpret this complex behavior, the scientific literature uses concepts that are rather complex themselves. Examples of such concepts are information, stability, synergy, internal representation and motor programs. In this course, questions such as "What do these concepts mean exactly?" and "How do these concepts help us to understand the behavior we observe?"

are be addressed.

Onderwijsvorm
8 two-hour lectures, 33 hour self-study, 28 hour essay writing s, 7 hour essay evaluation
The students prepare for the lecture by reading both papers and by writing a brief critical essay (maximum of 500 words) on one of them. Each essay will be evaluated by two randomly selected fellow-students (implying that, in the context of each lecture, each student will have to write one essay and score two essays). During the lecture the teachers then present their own evaluation of the papers in question, highlighting the theoretical background of a given concept and the manner in which it is defined and used in the study of interest. The evaluation by the teachers will assist the students in evaluating their own essay as well as their assessment of the quality of essays written by their peers. This cycle will repeat itself over the 7 concept-related lectures, allowing the students to develop their critical evaluation skills of key concepts used in the study of motor control and learning. Towards the end of the course, each student selects two of his or her own (most promising) essays to elaborate further into two final essays, which will then be scored by the teachers for final grading.

Toetsvorm
The grading of the two essays to be evaluated by the teachers will be based on the following weighted general aspects:

Language: spelling, grammar and style (20%)
Clarity of insight in the theoretical context (20%)
Clarity of insight in the concepts and their empirical elaboration (30%)
Argumentation: to-the-pointedness, logic and persuaviness (30%)
In order for the two final essays to be considered, all 7 essays and 14 evaluations should have been completed in time

Literatuur
Various scientific publications are be used, further information is provided during the course.

Vereiste voorkennis
No specific entry requirements.

Overige informatie

The two essays should each have a length of less than 1000 words

Biophysical Concepts in Human Movement Sciences

Vakcode	B_BIOCONCEPT (900663)
Periode	Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. J.H. van Dieen
Examinator	prof. dr. J.H. van Dieen
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak
The student knows the mechanical concepts that apply to control of joint position and movement, in particular equilibrium, stability, robustness, performance, and observability.
The student understands these concepts and can explain how they are related to clinical problems and to motor control in patients with joint disorders.
The student knows the physiological concepts of relative workload in sports and clinical research and training, in particular, (sub)maximal force/power generation, (sub)maximal energy expenditure, aerobic/anaerobic metabolism, blood flow, and anaerobic threshold.
The student understands these concepts and can explain how they are related to sports and rehabilitation research and practice.

Inhoud vak
In this course the students are acquainted with biophysical concepts that underlie current debates in HMS.
One part of the course deals with biomechanical concepts in particular with (in-)stability of joints and joint movement. Instability is often used in the clinical setting to describe the state of the joint after injury or in degenerative disorders. The term is often poorly defined, which leads to confusion in the communication between disciplines, e.g. between physiotherapists and orthopedic surgeons. Mechanics and control theory provide a rigorous framework for describing joint function. The relevance of this conceptual framework for the clinical context and the implications for diagnosis and treatment will be discussed.

The other part of the course deals with physiological concepts in particular with the use of relative workload. Relative workload is often used to induce similar loading of persons in sports and clinical studies, either to measure endurance or to induce a certain training stimulus. Relative workloads as percentage of maximal force/power or energy utilization (oxygen uptake) are used in various circumstances. While the choice for a given variable is essential for the result, it will be discussed whether the proper variables are chosen for the specific goals.

Onderwijsvorm

23 contact hours, divided in:
Lectures 10 * 2 hours
Assessment 3 hours
57 hours self study

The course consists of two series of lectures dealing with biomechanical and physiological concepts respectively. In the first lecture of the two series a general introduction will be given.In the second and third lecture of each series, the formal concepts will be introduced and explained and related to the applications in sports and health. In the fourth lecture questions by the students will be discussed.

Toetsvorm
Written test with open-ended questions, with equally weighted questions on both parts of the course content.

Literatuur

- Research articles and review papers will be made available at the start of the course

Vereiste voorkennis
The student should have a basic knowledge and understanding of the human musculoskeletal anatomy as described for example in Human Anatomy. EN Marieb, J. Mallatt, Benjamin Cummings, 3rd edition, ISBN: 0-8053-5335-6, chapters 1.1-1.16; 4.88-4.102; 4.99-4.102; 9.212-9.239; 10.244-10.253; 11.266-11.270.

The student should have a basic knowledge and understanding of biomechanics as described for example in Fundamentals of Biomechanics. Equilibrium, Motion and Deformation. M. Nordin and N. Ozkaya; Human Kinetics, ISBN 0387982833, chapters 1-5.

The student should have a basic knowledge and understanding of exercise and muscle physiology as described in for example W.D. McArdle, F.I. Katch, V.L. Katch: Exercise Physiology: energy, nutrition & human performance, 7th edition (2010) Lippincott Williams & Wilkins, ISBN 1608318591, chapters 7-11, 15-17, 21.

Clinical Exercise Physiology

Vakcode	B_CLINEXERC (900670)
Periode	Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. J.J. de Koning
Examinator	prof. dr. C.C. Foster Jr.
Docent(en)	dr. J.J. de Koning, prof. dr. C.C. Foster Jr.
Lesmethode(n)	Hoorcollege, Practicum, Werkcollege
Niveau	400

Doel vak
To provide the student with the fundamental knowledge of clinical exercise physiology as a variant of normal exercise physiology, which will enable the student to apply this knowledge in preventive and rehabilitative exercise programs.

Inhoud vak
Basic didactic information and laboratory experiences of the effect of pathophysiologic conditions on human energy metabolism and health. The focus will be on organ systems and their linkage to ATP generating pathways and on how this influences skeletal muscle performance. The application is to the use of exercise both diagnostically and as a therapeutic tool. After this course the student will have the fundamental knowledge and skills to use exercise in patients with cardiopulmonary/metabolic disease and to work cooperatively with other health care providers.

Onderwijsvorm
Lecture
Practical laboratory exercises
Directed reading

Toetsvorm
multiple choice

Literatuur
A selection of articles and practical guide on BlackBoard

Vereiste voorkennis
Toegepaste Inspanningsfysiologie.

Coordination Dynamics: Prin. Clin. Appl.

Vakcode	B_CLINCORDYN (900666)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. M. Roerdink
Examinator	dr. M. Roerdink
Docent(en)	dr. M. Roerdink
Lesmethode(n)	Hoorcollege, Computerpracticum, Practicum, Bijeenkomst, Deeltoets extra zaalcapaciteit
Niveau	400

Doel vak
The coordination dynamics approach is pursued to study how patterns of coordinated movement come about, persist and change as a function task constraints, expertise and pathology. The student is acquainted with the key principles, concepts and methods of coordination dynamics. The student can explain these aspects in a qualitative manner. The student is able to indicate how these aspects may contribute to assessments and interventions in the context of sports and rehabilitation. The student can interpret scientific literature in the area of coordination dynamics. The student can design new basic or applied coordination dynamics experiments.

Inhoud vak
Coordination dynamics is governed on the one hand by principles of self-organization, and on the other hand by intentionality, perceptual information and explicit knowledge. Coordination patterns exist at multiple levels: 1. dynamics within or between body segments of a moving person; 2. dynamics between moving segments of multiple persons and 3. dynamics between person and external events, as well as between persons. Coordination dynamics provides a framework to study the nature of pathological, normal and expert movements by assessing stability and loss of stability of coordination patterns as a function of training and rehabilitation.
The first part of the course provides an overview of the key principles, concepts and methods of coordination dynamics by adopting a 3-stage empirical approach: 1. gaining background theoretical information through lectures and literature, 2. gaining hands-one experience by participating in experiments, formulating hypotheses and analyzing the so-obtained data, 3. gaining a thorough understanding of the key aspects of coordination dynamics by linking theory and practice.
The second part of the course focuses on the application of coordination

dynamics in sports and rehabilitation, again by adopting a 3-stage empirical approach. In the context of rehabilitation, specific emphasis will be placed on interventions based on environmental coupling aimed at facilitating desired coordination patterns and/or stabilizing existing unstable coordination patterns. In the context of sports, the nature of interactions between two or more athletes will be the focal point, including their cooperative and competitive effects on pattern formation and coordinative stability.

Onderwijsvorm
Amount of contact hours (36 hrs), divided in:
Lectures: 10 * 1.75 hrs
Laboratories: 2 * 2.00 hrs
Computer Practicals: 5 * 2.00 hrs
Midterm Exam: 1 * 1.75 hrs
Exam: 2.75 hrs

Self study: 132 hrs

Toetsvorm
Written closed-book exams with open-ended questions. The final grade is determined by both the Midterm Exam (25%) and the Final Exam (75%). However, in case the grade of the Midterm Exam is lower than that of the Final Exam, the final grade is fully determined by the Final Exam grade (i.e., Midterm Exam [0%], Final Exam [100%]).

Literatuur
A selection of relevant book chapters and articles.

Vereiste voorkennis
Basic understanding of statistics (What is a standard deviation?), sine waves (What is the amplitude, offset, frequency and phase?), integral and differential calculus (What is the derivative of a sine wave?) and Matlab (Can you run a script?). Please note that Matlab scripts and functions are provided and so programming skills are not required for the computer practicals. Computer practicals are included to become acquainted with the handling and interpretation of the experimental data and associated coordination dynamics outcome measures).

Overige informatie
Note that Laboratory 2 will be held at the Duyvensz-Nagel Research Laboratory of Reade Center for Rehabilitation and Rheumatology (DNO, Reade, Overtoom 283). Students can subscribe for Laboratories and Computer Practicals on BlackBoard.

Current Issues in Sport and Exercise Psychology

Vakcode	B_CURRISSUES ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	drs. R.I. Hutter
Examinator	drs. R.I. Hutter
Docent(en)	dr. R.R.D. Oudejans, drs. R.I. Hutter, dr. R. Canal Bruland
Lesmethode(n)	Hoorcollege, Werkcollege

Niveau	500

Doel vak
The student is able to:
-outline the main findings from the sport and exercise psychology literature on the topics included in the course
-apply these theoretical findings to practical settings (the assignments include interviews, observations and analysis, intervention and questionnaire design)
-discuss practical findings from the assignments with peers and draw overall conclusions from these findings
-present practical findings from a sound theoretical basis.

Inhoud vak
In this course several important, current issues in both sport and exercise psychology are addressed. The course aims to provide in-depth information and to transfer this information to practical settings through different assignments.
The topics to be discussed are:
• Career development and transitions in sport
• Injury prevention and rehabilitation
• Clinical issues in sport psychology
• Ethical issues and moral behavior in sport
• Mechanisms of psychological outcomes of exercise behavior
• Intervention strategies for exercise promotion and exercise adherence
The course consists of two meetings per topic. For each topic, literature and review questions are provided. The students are required to study the literature and answer the review questions. In the first weeks the meetings consist of discussion of the review questions. In addition, for each topic a recent study on the topic is highlighted.
After the first series of meetings a multiple choice exam takes place. Next, students work on practical assignments. In the last week of the course the findings of the practical assignments (from interviews, observations, measurements and analyses) are discussed, reviewed and presented.

Onderwijsvorm
Discussion meetings

Toetsvorm
The review questions are compulsory to pass the course. Students take a multiple choice exam (40%), hand in one assignment (30%), and present one assignment with small groups (30%). All parts have to be scored sufficient to pass.

Literatuur
- Course manual (Available on Blackboard);
- Recent articles and book chapters on sport and exercise psychology

Vereiste voorkennis
Students should have basic knowledge and understanding of sport and exercise psychology as is available in textbooks such as Cox, R.H. (2007). Sport Psychology: Concepts and Applications, 6th edition. Boston: McGraw-Hill, Biddle, S.J.H. & Mutrie, N. (2008). Psychology of Physical Activity: Determinants, well-being and interventions (2nd edition). New York, NY: Routledge, or Bakker, F.C. & Oudejans, R.R.D. (2012). Sportpsychologie. Nieuwegein: Arko Sports Media.

Electromyography

Vakcode	B_ELECTROMYO (900815)
Periode	Periode 5
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. J.H. van Dieen
Examinator	prof. dr. J.H. van Dieen
Docent(en)	prof. dr. J.H. van Dieen
Lesmethode(n)	Hoorcollege, Practicum, Computerpracticum
Niveau	400

Doel vak
- The student has a basic knowledge of electrophysiology and the background of electromyographical; signals;
- the student has a basic knowledge of the different ways; of collecting electromyograpical data in various fields of application;
- the student can analyze EMG data for kinesiological use;
- the student can choose the appropriate method for collecting and analyzing EMG data in a kinesiological study;
- the student knows the possibilities and limitations of EMG data;
- the student can interpret EMG data in relation to motor control, force and fatigue;
- the student can identify contamination in EMG data and can apply methods to reduce its effects;
- the student knows the standards for reporting EMG data.

Inhoud vak
In this course, the students are introduced to the electrophysical background of electromyography (EMG). Subsequently, the course focuses on methodological aspects of EMG acquisition and analysis, addressing the potential of this method as well as its pitfalls.

Onderwijsvorm
lectures 6 x 2 hours
practical 2 x 3 hours
The lectures introduce the following topics:
- electrophysiology;
- motor control (motor unit recruitment and firing);
- instrumentation and electrodes;
- HD- EMG and spatio- temporal information;
- onset determination;
- amplitude estimation;
- force estimation;
- cocontraction and cross- talk;
- motor unit firing and decomposition;
- frequency content, conduction velocity and fatigue.

Practicals concern analyzing EMG data.

Toetsvorm

2 hours; written test with equally weighted open- ended questions

Literatuur
Research articles and lecture handouts to be made available before the course

Vereiste voorkennis
- knowledge of and skills in programming in MATLAB at the level described for example in ‘Verwerken van digitale signalen’.
- basic knowledge and understanding of the physiology of muscles and their control.

Overige informatie
Maximum number of students: 40

Energy Flow Models

Vakcode	B_ENERFLOW (900675)
Periode	Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. J.J. de Koning
Examinator	dr. J.J. de Koning
Docent(en)	dr. J.J. de Koning
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	500

Doel vak
To provide the student with knowledge about energy flow models, and so to enable the student to apply this knowledge in the modelling of human endurance performance.

Inhoud vak
Research in which exercise physiology and biomechanics are combined as a 'toolbox' is apparently unique and successful. This course familiarizes the student with one branch of this approach. Energy flow models, based on power equations, will be used to study performance determining factors in endurance sports. This course explains the technique of modelling, how parameter values are obtained from experiments and how simulations with the model can be done. The student will construct a model of an endurance athlete to study the effect of parameter values on performance in cycling, speed skating and running. The models will be made in MATLAB. Knowledge of MATLAB is necessary to be successful in this course.

Onderwijsvorm
Lectures and guided practical;
84 hours (from which 28 practical, 6 lecture, 2 exam and 48 self study).

Toetsvorm
Written examination and practical report (30%/70%).

Literatuur

A selection of articles and practical guide on Blackboard.

Vereiste voorkennis
900104: Biomechanica (Students are expected to have sufficient knowledge of this subject);

900215: Mechanische analyse van het menselijk bewegen (Students are expected to have sufficient knowledge of this subject)

Entrepreneurship in Human Movement Sciences

Vakcode	B_ENTREPREN (65412020)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. E. Masurel
Examinator	prof. dr. E. Masurel
Docent(en)	prof. dr. E. Masurel
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak
Students obtain knowledge about and insight in the relevance of entrepreneurship and innovation for their own discipline. Students learn about the processes which are involved in the recognition and exploitation of opportunities, about creating economic and social value and about the nature and role of networks. In addition students gain knowledge of different entrepreneurial processes and the importance of valorization of findings and business ideas for a knowledge- based economy.

Inhoud vak
This course consists of two tracks: a theoretical track and a practical track. These two tracks run simultaneously.

In the first track you learn about entrepreneurship. Answers are found on questions such as: what is entrepreneurship? What defines an entrepreneur? What are entrepreneurial opportunities? What is the role of innovation in entrepreneurship? What is corporate social responsibility (CSR)? How can we judge the feasibility of entrepreneurial ambitions?

Simultaneously you work on an assignment (second track). In the first week of this course you search for an innovation in your own discipline (product, service, process etc.). Your choice must be approved by the lecturers. The first part of the assignment consists of a description of the innovation which you have chosen. Subsequently, you make a SWOT analysis and a network analysis of the innovation. Also a paragraph of CSR should be added. The final part of the assignment is your own feasibility study: how would you valorize the innovation to the market.

Onderwijsvorm
Lectures and workshops. Each week scientific lectures or practical workshops are given. These lectures are both the basis for the exam and

for the assignment.

Toetsvorm
You conduct a written exam and an assignment. Both the exam and the assignment will determine 50% of the grade. The exam and the assignment must be of sufficient quality.

Literatuur
The course manual contains a list of online available articles.

Overige informatie
Optional course for Master students 'Human Movement Sciences' 'Sport, Exercise & Health', 'Fundamental and Clinical Movement Sciences'.

Exercise and Health

Vakcode	B_EXERHEALTH (900667)
Periode	Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	M. van Reijen
Examinator	M. van Reijen
Docent(en)	dr. T.M. Altenburg, M. van Reijen
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak
The main objective of this course is to provide you with the necessary tools to write a research proposal targeting a public health problem.
By the end of this course you should be able to:
§ Systematically analyse a public health problem and its underlying behavioural and environmental determinants;
§ Evaluate an existing intervention study according to set criteria;
§ Write a research proposal aimed at improving a public health problem;
§ Present and discuss your final research proposal.

Inhoud vak
The overall aim of this course is to enable you to write a research proposal targeting a public health problem.
Terminology to describe a public health problem, analysis of behaviour and its determinants (personal and environmental), intervention development, theories and models for change, intervention implementation and evaluation (effect, process and cost-effectiveness) are discussed in-depth such that you are able to write your research proposal.
Examples from current studies are evaluated to develop a critical mind on shortcomings in existing research.

Onderwijsvorm
This course will consist of lectures, seminars and a final (obligatory) presentation session.

Toetsvorm
You are required to produce a research proposal (60%) and presentation (40%). Both must be of sufficient quality to pass the course.

Literatuur
- Bartholomew LK, Parcel GS, Kok G. 1998. Intervention mapping: a process for developing theory- and evidence-based health education programs. Health Educ Behav 25:5: 545-563
- Courneya KS. 2010. Efficacy, effectiveness, and behaviour change trials in exercise research. Int J Behav Nutr Phys Act 7:81
- Koelen MA, Ban van de AW. 2004. Health Education and Health Promotion. Wageningen Academic Publishers 157-182

Vereiste voorkennis
Fundamental knowledge on statistical techniques is strongly advised.

Overige informatie
The last seminar is obligatory.

Fatigue, Aging and Disuse

Vakcode	B_FATIGUE (900648)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. R.T. Jaspers
Examinator	dr. R.T. Jaspers
Docent(en)	dr. R.T. Jaspers
Lesmethode(n)	Werkcollege, Hoorcollege
Niveau	400

Doel vak
At the end of this course the student has knowledge of the short term changes in the physiology of the neuromuscular system, as induced by fatigue and long term adaptations as a result of disuse and aging, and the underlying (molecular) mechanisms. The student can apply this knowledge to questions regarding human movement in various situations (e. g. sports, aging, illness, injury, disorders).

Inhoud vak
Neuromuscular performance in terms of muscle peak power and maximal steady state power is impaired during aging and with a chronic decrease in usage, such as during bed rest, diseases, injuries, neuromuscular disorders and (most extreme) after a spinal cord injury. During the course, a critical overview is given of the current knowledge of short and long term adaptations of the neuromuscular system in response to training, aging, disuse and chronic disease how these relate to impaired muscle function. Underlying (molecular) processes leading to atrophy and reduced force generating capacity as well as a reduced endurance performance of the neuromuscular system are discussed. To obtain indications for how training or other interventions could effectively prevent these adverse effects and improve muscle function, a detailed overview is given of training induced changes in muscle phenotype and how these are related to molecular regulators of protein synthesis and

degradation and mitochondrial biosynthesis. The content is mostly based on recent own research.

Onderwijsvorm
The course will consist of a series of lectures during which relevant questions are addressed and discussed. In additional meetings relevant items are addressed in group discussions based on prepared questions/statements.

Toetsvorm
Assessment
Written test with open- ended questions.

Literatuur
Book chapters, research articles and review papers to be made available before the course.

Vereiste voorkennis
The student should have a basic knowledge and understanding of molecular, biology, exercise and muscle physiology.

Health and Society

Vakcode	B_HEALTHSOC (900664)
Periode	Periode 6
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. M.C. de Bruijne
Examinator	dr. M.C. de Bruijne
Docent(en)	T. Oeschger, dr. M.B.M. Soethout, dr. M.H.H. Hoogsteder
Lesmethode(n)	Hoorcollege, Practicum
Niveau	500

Doel vak
The students are able to demonstrate knowledge and understanding of:
• the important determinants of health and disease in the general population;
• the goals, strategies and principles for health promotion in a general and specific population (primary, secondary and tertiary prevention);
• the fundaments of different health systems and their goals and functioning in practice;
• priority setting and decision making in the development and implementation of public health programs.

Inhoud vak
Lectures will provide an introduction in the theory and practice of important topics in public health: health policy and care systems, health monitoring, and health prevention and promotion. These topics will be further illustrated and discussed in a case-oriented tutorial. Also a critical analysis of a public health report is discussed in a tutorial. The students (in couples) then select a topic of interest (e.g. development or implementation of a program for health promotion) for further study, presentation and a final paper.

Onderwijsvorm
• Lectures (3 x 2 hours and 1x 3 hours), and tutorials (3 x 2 hours and 1 x 4 hours)

Toetsvorm
Structured paper & presentation on a self chosen public health topic.

Literatuur
We advise students to read the book: Gillam, Yates & Padmanabhan. Essential Public Health. Theory and Practice. Cambridge University Press 2007.
Obligatory papers: will be provided during the course.

Vereiste voorkennis
The students must be familiar with the content of the book: Gillam, Yates & Padmanabhan. Essential Public Health. Theory and Practice. Cambridge University Press 2007.

Overige informatie
Examination format structured paper, peer review of a paper and presentation.

Teaching staff:
dr. M. Soethout
dr. M.C. de Bruijne
dr. N. Evans
dr. J. Voordouw
dr. M. Hoogsteder

Intermuscular Load Sharing

Vakcode	B_INMUSCLOAD (900809)
Periode	Periode 6
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. J.H. van Dieen
Examinator	prof. dr. J.H. van Dieen
Docent(en)	prof. dr. J.H. van Dieen, dr. H. Maas
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	500

Doel vak

• The student is able to explain the most common methods for inverse mechanical analysis of muscle-joint systems and is able to apply these.
• The student is able to describe the possibilities and limitations of these methods.
• The student is able to describe recent insights on mechanical and neural connectivity between muscles and can integrate these insights into the inverse mechanical analysis.
• The student is able to assess the validity and sensitivity of such methods and can interpret and report results in a scientific

format.

Inhoud vak

In this course, the students are introduced to methods to estimate the mechanical load on structures in a muscle-joint system through inverse mechanical analysis. Since muscle-joint systems are mechanically indeterminate, estimating the distribution of the net moment over moment-producing structures (mainly muscles) is the main challenge. The course consists of three major subjects. First, after a general introduction on modeling and model validation, EMG driven and optimization models for estimating the distribution of the net moment over muscles will be dealt with and data on load sharing as measured in animal experiments will be discussed in the context of such models. During a computer lab students will modify and use a simple model of a muscle-joint system driven by optimization. Second, the mechanical and neural connectivity between muscles will be introduced in a lecture. In the subsequent computer lab, the model will be adapted to study the effects of intermuscular force transmission and neural overflow. Third, a formal analysis of joint stability will be introduced and the effects of stability requirements on load sharing between muscles will be discussed. In the following computer lab, students will apply stability constraints in the model to further study these effects. Based on sensitivity analyses for specified inputs, parameters, or model assumptions with the model, students will prepare a written report with respect to a self-selected question related to one of the three parts of the course.

Onderwijsvorm

Lectures 11 hours
Reading articles 8 hours
Article assignment 4 hours
Computer labs 6 hours
Preparing presentation 3 hours
Final assignment 52 hours

Toetsvorm
Students, in groups of two, write a written report based on the topic of one of the three computer labs (optimization criteria, intermuscle connectivity, stability constraints). They phrase a research question and hypothesis with respect to this topic and perform the analyses needed to answer the question. First a proposal is written and submitted for feedback. The report should have the format of a research paper. However, the introduction section should be limited to a minimum (i.e., one paragraph; ~200-300 words), including the research question and hypothesis. The report should describe in detail which analyses were performed using which models (methods) and provide the results of the analyses. The discussion should incorporate relevant methodological literature and literature concerning the question at hand. The total number of pages should not exceed 20 excluding references.

Literatuur
A series of papers will be made available at the start of the course.

Vereiste voorkennis
- The student should have a basic knowledge and understanding of the human musculoskeletal anatomy as described for example in Human Anatomy. E.N. Marieb & J. Mallatt (Eds.), Benjamin-Cummings Publishing Company,

3rd edition, ISBN: 0-8053-5335-6, chapters 1.1-1.16; 4.88-4.102; 4.99-4.102; 9.212-9.239; 10.244-10.253; 11.266-11.270.
- The student should have knowledge and understanding of biomechanics (at the level described for example in Kinetics of Human Motion. V. M. Zatsiorsky (Ed.), Human Kinetics, 1st ed. 2002, Chapters 1-5.
- The student should have a basic knowledge and understanding of the physiology of muscles and their control at the level described for example in Physiology of Sport and Exercise, J.H. Willmore & D.L. Costill (Eds.), Human Kinectics, ISBN 0-87322-693-3, chapters 2-3.
- The student should have knowledge of and skill in programming in matlab at the level described for example in: Signalen in beweging - het verwerken van digitale signalen met MATLAB. T. de Haan (Ed.), Faculteit der Bewegingswetenschappen Vrije Universiteit Amsterdam, zevende druk, zomer 2011 or the English translation (both available on blackboard sites of the VU University, Faculty of Human Movement Sciences) or as described in Engineering problem solving with MATLAB, D. M. Etter (Ed.), Prentice-Hall, International, Inc. ISBN 0-13-520891-2, chapters 2 – 4.

Aanbevolen voorkennis
•The student is able to explain the most common methods for inverse mechanical analysis of muscle-joint systems and is able to apply these.
•The student is able to describe the possibilities and limitations of these methods.
•The student is able to describe recent insights on mechanical and neural connectivity between muscles and can integrate these insights into the inverse mechanical analysis.
•The student is able to assess the validity and sensitivity of such methods and can interpret and report results in a scientific format.

Overige informatie

Max Students : 30

Maximal Neuromuscular Performance

Vakcode	B_MAXNEUR ()
Periode	Periode 1
Credits	3.0
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. C.J. de Ruiter
Examinator	dr. C.J. de Ruiter
Docent(en)	dr. C.J. de Ruiter
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak
The student has knowledge of the role of muscle activation and (changing) muscle properties on maximal human neuromuscular performance during high intensity exercise and the student has knowledge of the relevant research methods.
The student can apply this knowledge to questions regarding testing and improving of maximal neuromuscular performance in sports (and rehabilitation).
The student is able to evaluate the validity and relevance of basic scientific literature for neuromuscular performance in a sport

(rehabilitation) related context.
The students will learn to critically read scientific papers on neuromuscular performance published in international journals. The student will be able to communicate ('translate') the implications of basic scientific knowledge of neuromuscular performance to practical issues raised by coaches and therapists in the field of sports (and rehabilitation).
Students will not learn how to do research, or how to test athletes, or how to design exercise programs in sports or rehabilitation etc.
Students will learn what underlying factors/mechanisms they should be aware of while designing muscle function tests and exercise programs.

Inhoud vak
During the course, a critical overview will be given of the current knowledge of maximal neuromuscular performance during relatively high intensity exercise of short duration (40 ms up to 5 min). Most examples will be provided from own research. The emphasis will be on the coupling between basic knowledge of muscle activation and (changing) muscle properties during human movement and their consequences for testing and training. This is a fundamental sports related muscle physiology course, not an applied sports course.
The following subjects will be addressed:
• Voluntary activation;
• Explosive force/power;
• Influence of temperature (incl. warm-up);
• Potentiation;
• (Low frequency) fatigue;
• Shortening deficit and lengthening force enhancement;
• Recruitment of motor units.
• Muscle oxygenation

Onderwijsvorm
The course will consist of a series of nine lectures during which relevant practical questions will be used as a starting point. Subsequently the focus will be on fundamental neuromuscular properties as studied in a series of accompanying scientific papers.

Toetsvorm
2.5-hour exam with open-ended questions in the week immediately following the three week lecture period.

Literatuur
The course will mainly use research papers. Basic background information is derived from Chapters 1-10 of: Skeletal muscle: from molecules to movement. A textbook of muscle physiology for sport, exercise, physiotherapy and medicine. Jones, D.A., Round, J. and A. de Haan, Edinburgh: Churchill Livingstone, Elsevier Science Limited, 2004. ISBN 0 443 07427 5

Vereiste voorkennis
Sufficient knowledge of the basics of Muscle Physiology is absolutely necessary. In order to successfully participate, the students have to understand the following concepts: anatomy of skeletal muscle, sarcomere function, twitch, tetanus, length-force, force- and power-velocity, and stimulation frequency-force relations, the size principle of motor unit recruitment, rate coding, EMG, electrical stimulation, fibre type related differences in contractile properties, cross-bridge kinetics, excitation contraction coupling, the basic metabolic changes during exercise (changes in ATP and CrP, glycolysis, oxidative phosphorylation)

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Neurorehabilitation in the Context of Movement Sciences

Vakcode	B_NEURREHMS (900659)
Periode	Periode 4
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. G. Kwakkel
Examinator	prof. dr. G. Kwakkel
Docent(en)	dr. E.E.H. van Wegen
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak
The student is capable to:
- understand mechanisms of functional recovery related to stroke;
- understand the pathophysical processes and symptoms that characterize stroke, Parkinson's Disease and Multiple Sclerosis;
- understand clinical decision making in neurorehabilitation for management of patients with stroke, Parkinson's Disease and Multiple Sclerosis;
- acknowledge the importance of ICF- model in rehabilitation medicine.

The student is able to:
- interpret the clincal relevance of selected measurements of outcome;
- categorize measurements of outcome used in rehabilitation medicine;
- understand the clinical decision making process for functional prognosis in Multiple Sclerosis, Parkinson's Disease and stroke.

Inhoud vak
Within eight lectures the significance of movement science in the field of neurorehabilitation is elucidated. Practical examples are given on how theories on motor control, perception and behavior can be applied in clinical research. On the other hand, the emphasis of these lectures is placed on how movement scientists may collaborate in clinical research of patients with neurological diseases such as stroke, Parkinson's Disease and Multiple Sclerosis. In order to improve knowledge transfer from preclinical to clinical research (i. e., translational research), students will be educated in the state of art about the underlying mechanisms of functional recovery and the role of adaptive motor control in mentioned neurological diseases.

Onderwijsvorm
lecture
8 lectures
Lectures in blocks of 2 x 50 minutes.

Toetsvorm
50 multiple- choice questions. Re- examination will consist of 3 to 4 open ended questions (written test).

Literatuur

Manuscripts (SCI) will be downloadable from BlackBoard.

Vereiste voorkennis
Students should have knowledge and understanding of ICF model in rehabilitation medicine.

Normal and Abnormal Motor Development

Vakcode	B_MOTORDEVEL (900668)
Periode	Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. A. Ledebt
Examinator	dr. A. Ledebt
Docent(en)	dr. A. Ledebt
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak
Students should be able to identify, summarize, critically evaluate and expand upon topics regarding the development of perceptual-motor behavior in normal and populations at high-risk for abnormal motor development. Students are acquainted with different types of qualitative motor assessments and instruments to quantify motor performance. They are able to identify early alarm signals and describe the advantages and disadvantages of several tools to diagnose disorders involving motor problems. They are able to describe perceptual and motor problems of several developmental disorders (e.g. cerebral palsy, developmental coordination disorder).

Inhoud vak
The course deepens the understanding of normal and abnormal motor development and developmental disorders in foetuses, infants and young children. Lectures and tutorials provide insight into actual problems in the research and practice of perceptual-motor development, particularly in the area of health sciences. The lectures present an overview of the developmental disorders in which motor problems are either defining characteristics (i.e., cerebral palsy) or form part of a larger spectrum of difficulties (i.e., autism, ADHD). Symptoms will be described and diagnostic criteria will be discussed. The main rehabilitation methods will be related to theories on development.

During tutorials the students learn to discriminate abnormal from normal movements in foetuses, infants and young children and are introduced to different types of measurement tools used to quantify motor performance.

Onderwijsvorm
Final written exam. Attending the tutorials and writing the reports linked to them are compulsory. The reports and the critical review have to be marked as “pass” by the lecturer.

9 lectures en 2 tutorials (2 hours each)

Toetsvorm
Final written exam with open-ended questions. Attending the tutorials is compulsory. The critical review has to be marked as “pass” by the lecturer.

Literatuur
Reader.

Vereiste voorkennis
Bases in neurophysiology and neuroanatomy.

Perception for Action

Vakcode	B_PERCACTION (900810)
Periode	Periode 4
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. J.B.J. Smeets
Examinator	prof. dr. J.B.J. Smeets
Docent(en)	prof. dr. J.B.J. Smeets
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	500

Doel vak
The student is able to:
- describe the functioning of the sensory systems relevant for motor control;
- interpret scientific literature in the area of perception and apply it to the field of motor control.

Inhoud vak

The topic of this course is the question: how is sensory information processed to guide ones action? More specific: how do we know where a target and (a part of) our body is? The answers to these questions require knowledge about the sensory organs, their signals, and how these signals are processed and combined in order to be used to control our actions. Each topic (e.g. proprioception, binocular vision) is introduced by a lecture, but he focus of the course is on the discussion of papers of the last decade The discussion will be about both the phenomenology and the mechanisms.

Onderwijsvorm
Amount of contact hours:
Lectures (‘hoorcolleges’) 7
Tutorials (‘werkcolleges’) 7
Assignments & self study 68
Practicals 2

Each meeting will be a combination of tutorial consisting of a discussion of the previous assignment (1 hour), and a lecture introducing to the topic of the next assignment (1 hour)

In the practical, the students will compare two psychophysical

techniques and discuss their effectiveness in answering the question what perceptual information is available.

Toetsvorm
After each lecture, students receive an assignment. Six of them have to be handed in before the next meeting. These assignments are graded, and count for 10 % of the final grade. The assignment after the final lecture will contribute 35 %: the remaining 5% on completion of the practical.

Literatuur
Literature needed for the course will be distributed during the course.

Vereiste voorkennis
No entry requirements. Basic knowledge of the nervous system is expected (e. g. function of various brain areas).

Overige informatie
- The maximum number of participants in this course is limited to 40

Perceptual-motor Learning

Vakcode	B_PERCML (900682)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. G.J. van der Kamp
Examinator	dr. G.J. van der Kamp
Docent(en)	dr. G.J. van der Kamp
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak
- The student is capable to describe, summarize and compare the key concepts, experimental methods, and empirical evidence for contemporary theories of perceptual- motor learning;
- The student is capable to apply knowledge from contemporay theories of perceptual- motor; learning to provide insight; into concrete problems and common habits in the practice of sport and rehabilitation with respect to perceptual- motor learning;
- The student is capable to critically assess and evaluate the underlying assumptions and empirical evidence for the contemporary theories of perceptual- motor learning. The student is able to evaluate the applied value of the contemporary theories for the practice of perceptual- motor learning in sports and rehabilitation;
- The student is capable to orally present a concise summary of the main contributions of contemporary theories of perceptual- motor learning for applications in practice of sports and rehabilitation. The student is capable to contribute to discussions regarding the applied value of the contemporary theories for the practice of sports and rehabilitation.

Inhoud vak

The course provides a capita selecta of contemporary theories of perceptual- motor learning, such as the ecological approach, common-coding approach and neuropsychological approaches to perceptual-motor learning. Among others, the following topics will be addressed; variability of practice, video-feedback, self-controlled feedback, gaze-training, education of attention, anticipation, internal & external focus of attention, motor familiarity, observational learning, implicit & explicit learning, analogy learning, errorless learning, re-investment. Besides a concise overview of the key concepts, hypothesis and experimental methods and empirical support for these theories, the course addresses the significance and (possible) applications of these theories for the practice of sports and rehabilitation.

Onderwijsvorm
lecture
tutorial
Three lectures provide the student with an introduction into the three contemporary approaches to perceptual- motor learning. The lectures give a short background to the theories and provide a critical discussion of the key concepts and empirical evidence. During the tutorials the student applies the contemporary theories to the practice of perceptual- motor learning in sports and rehabilitation by proposing theory- derived solutions to 'problems from practice'. Assessment 40 hours and for preparation tutorials 20 hours.

Toetsvorm
The lectures provide the student with an introduction into each of the contemporary approaches to perceptual- motor learning. The lectures give a short background to the theories and provide a critical discussion of the key concepts and empirical evidence. During the tutorials the student applies the contemporary theories to the practice of perceptual- motor learning in sports and rehabilitation by proposing theory- derived solutions to 'problems from practice'. (Assessment 80 hours and for preparation lectures and tutorials 60 hours)

Literatuur
A collection of recent theoretical and experimental papers from the scientific literature (details to be announced).

Vereiste voorkennis
The student is familiar with the type of problems and questions that are addressed in theories and research of perceptual- motor coordination, control and learning. The student is able to independently search for, acquire and report knowledge from contemporary scientific papers.

Overige informatie

Maximum number of students: 50

Practical Internship

Vakcode	B_PRACINTERN (900680)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels

Faculteit	Faculteit der Bewegingswetenschappen

Doel vak
The course is intended to introduce students to a company, institute or organization with the aim of gaining insight into the way Human Movement Science can be applied within a company, institute or organization or otherwise be applied in such a way that the student can make an optimal impression for the sector concerned within the job market.

Inhoud vak
Practical internships can be taken at various companies, institutes or organizations, which is why there can be considerable differences regarding the content of the internship. Generally speaking students will receive a written assignment containing, in any case, what is expected of the student within the framework of the internship. The student is expected to become familiar with the activities within the company, institute or organization, as well as gaining insight into the role of their assigned department within the organization. This includes evaluating which Movement Sciences aspects are applied within in the department and which aspects could be applied in the future.

Rehabilitation: Restoration of Mobility

Vakcode	B_REHABMOB (900657)
Periode	Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. J.H.P. Houdijk
Examinator	dr. J.H.P. Houdijk
Docent(en)	dr. J.H.P. Houdijk
Lesmethode(n)	Hoorcollege, Practicum
Niveau	500

Doel vak
The student is capable to:
• understand the relevant issues, terms, concepts, and models in the restoration of mobility within the context of rehabilitation,
• understand and knowledge of the practical aspects of patient-related – biophysical - research into restoration of mobility in rehabilitation,
• Develop knowledge, understanding and skills in (clinical) human movement research results, methods and techniques of measurement of ‘function & structure, activity, participation and functionality,
• Appreciate and understand various aspects of adaptation, compensation, training and learning of function and activities in the framework of restoration of mobility in persons with lower limb impairments,
• understand the contexts, and the practical process of scientific research and communication in the combined fields of rehabilitation and human movement sciences.

Inhoud vak
Being the key-issue in rehabilitation, this course concentrates on the ‘restoration of mobility’ – and its underlying mechanisms - at the different levels of the International Classification of Functioning,

Disability and Health (WHO 2001). Primarily a biophysical approach is taken: biomechanical and exercise physiological principles, techniques and research findings will be discussed in specific patient-related experiments and studies. Aspects of adaptation, compensation as well as concepts of learning and training mechanisms will be addressed. Research in this field will be presented and discussed in the format of ‘Capita Selecta’.

Onderwijsvorm
Brief description of Lectures (‘hoorcolleges’): 6 lectures in which the current issues and state-of-the-art research different patientpopulations is discussed.
Practicals: two visits to rehabilitation centers(Reade Amsterdam, Heliomare Wijk aan Zee)
Assessment: a written assignment (16 hours), a written examination (41 hours self study and 3 hours examination).

Toetsvorm
Specific description of the assessment form, such as:
- written test: written examination covering lectures and reading material; short essay questions. (80%)
- assignment(s): essay on restoration of mobility conform format popular scientific magazine. (20%).

Literatuur
A selection of scientific papers.

Vereiste voorkennis
None.

Research Internship

Vakcode	B_RI (900624)
Periode	Ac. Jaar (september)
Credits	21.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Niveau	600

Doel vak
During the research internship, students conduct scientific research in a 'master - pupil relationship'. The research must meet the following qualifications:
- The research is aimed at a suitably challenging research question;
- The research is conducted in a methodologically correct way;
- The research is related to and is based on the theory that applies to planned research.
The teaching focus of the internship is on gaining insight in to the connection between the components of the research process, namely formulating a research question, creating a hypothesis, planning and conducting experiments, processing data, interpretation of the results and reporting. It should be kept in mind that 'experiments' should not be interpreted too narrowly: these can also be field measurements, or epidemiological research.

Onderwijsvorm
The student pair or student conducts the research internship under the guidance of a faculty staff member. The internship is often part of a larger project. The subject of the internship is chosen in consultation with a staff member and/or the coordinator. It is also possible for a student to choose one's own subject, in consultation with the coordinator. Proposals for an internship from staff members and external partners can usually be found on Blackboard ('Research Internship'), although it might be worthwhile contacting the Research Group Leaders (PI) of research institute MOVE for information on the latest possibilities. The Research School MOVE website (www. move. vu. nl) is an appropriate orientation on the Research Internship. In consultation with the coordinator, a student may conduct the research internship outside the faculty or abroad. Especially for foreign projects, additional requirements related to courses followed and obtained grades might apply. Above all, an internship abroad requires an early start to have sufficient time for the much more complex organization of the internship (at least 1 year before the start of the internship). Once the subject and the internship supervisor(s) have been established, the student writes a work plan for the research internship, comprising research question, hypothesis(es), methods statistics and planning. Beyond time schedule, the latter should include choices for equipment and indications for organization of the work. If the work plan is approved by the internship supervisors, it has to be presented during a work group meeting of the specialization to which the students belong, or, if applicable, a meeting of the specialization in which the work is best suited. Reporting takes place in the form of an English language formal paper, or research report (depending on the internship). Research results also have to be presented at a work group meeting at the end of the process. Every student has a right to consultation and supervision during the research internship. The available time for supervision depends on the size of the internship and is in the order of 30 hrs for an individual 24 ECTS internship (and for a pair 60 hrs).

Toetsvorm
The evaluation of the research internship consists of three elements, namely:
- the performance of the experiments and specifically the data collection and processing;
- the report;
- the oral presentation of the report during the work group meeting.
The performance of the experiments is judged by the internship supervisor(s), the report and the oral presentation are judged by both the internship supervisor(s) and a second assessor. The performance of experiments makes up 40% of the mark, the report makes up 50% and the oral presentation makes up the final 10%.

Literatuur
Course Manual 'Research Internship', available on Blackboard.

Overige informatie
The final version of the report has to be submitted to the Research Internship Blackboard site for a plagiarism check before the mark can be registered by the student administration office. In case the electronic check should lead to a formal check, the administration of the final mark may be postponed until a final assessment by the Examination Commission had been made.

Short Literature Review

Vakcode	B_SLR (900601)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Niveau	600

Doel vak
The aim of the Short Literature Review is to determine whether a student can formulate a research question and an objective answer to this question related to Human Movement Sciences based on peer-reviewed literature and is subsequently able to express these findings in a written report. Secondly, the Short Literature Review will serve as an evaluation of the student's skills in scientific writing. The Short Literature Review is an individual product.

Inhoud vak
The student chooses a subject related to Human Movement Sciences on which to write the Short Literature Review. The subject of the Short Literature Review should not be related to the subject of the Research Internship.

Onderwijsvorm
The student formulates a question related to Human Movement Sciences, which should be approved by a staff member of the department. In fore coming cases, the coordinator my allocate a supervisor, usually on the basis of the chosen subject and availability. At the start of the writing process, the student draws up a plan. This plan must contain a detailed presentation of the question for the Short Literature Review, a literature search strategy and a temporary classification (i. e. chapters or paragraphs). The student collects and selects relevant literature for the Short Literature Review and writes a report on the chosen subject. Regular consultation with the supervisor is recommended. The student is entitled to 12 hours of supervision. The completed Short Literature Review may be presented during a research meeting of one of the specializations.

Toetsvorm
If the student or supervisor feels that this is necessary a second opinion can be asked for.

Literatuur
Course manual Short Literature Review (available on Blackboard).

Overige informatie
The final version of the Short Literature Review has to be uploaded to the relevant Blackboard site for a plagiarism check. The electronic evaluation form has to be filled in before the mark can be registered by the study secretariat.

Special Topics in Sports Engineering

Vakcode	B_SPTOPICS ()
Periode	Periode 5
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. H.E.J. Veeger
Examinator	prof. dr. H.E.J. Veeger

Doel vak
After following this course, students should understand the complexity of maximizing sports performance and the importance of the inclusion of material – athlete interaction. More specifically, students should be:

-Familiar with the Power Equation concept and be able to apply this to cycling;
-Have knowledge of methodological aspects of sports research, in particular error propagation, man – machine interaction (closed loop complexity), measurement techniques, internal and external validity.
-Have insight in the organizational and psychological complexities of sports innovation.
-Able to measure key parameters needed for power equations, related to their own field and have experience in the measurement of key parameters in adjacent fields;
-Able to provide a cycling performance simulation programme with the parameters necessary to evaluate performance on a realistic level;
-Able to collect and present to fellow group members, data on parameters for such a simulation program.
-Present research findings through an individual portfolio, and a group presentation/poster/brief oral.

Inhoud vak
Special Topics in Sports Engineering is an inter-university course for Master students in Mechanical Engineering, Movement Sciences, Sport Sciences and other related MSc programmes. The course has been organised as a two-week intensive course, and comprises lectures, demonstrations, practicals, hands-on research and presentations. The course will be taught by staff from Delft University of Technology, Sheffield Hallam University and VU Amsterdam. The course is organised around a basic theme relevant for sports engineering. In 2014 – 2015 this theme will be "Maximizing cycling performance". During the course students will work out what aspects determine cycling performance, and collect data (through experiments or literature research) that are needed to develop / feed a simulation programme for the estimation of the optimal bike – rider combination and the maximal performance humanly possible.

Onderwijsvorm
Two weeks fulltime course

Toetsvorm
Portfolio:
1. Overview of scientific literature studied
2. Test results for at least one of the parameter collection experiments
3. Description of the parameter collection experiment
4. Printout of the presentation to the
5. The final simulation model

Literatuur
Will be provided during the course

Vereiste voorkennis
Basic knowledge of Matlab

Overige informatie
- This course is an interuniversity course given for both TU and VU students: regular travel is thus required;
- The course is organised as a two-week intensive course. Full availability during these two weeks is mandatory
- The maximum number of attendants = 20

Sport and Society

Vakcode	B_SPORTSOC (900665)
Periode	Periode 5
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. I.M. van Hilvoorde
Examinator	dr. I.M. van Hilvoorde
Docent(en)	dr. I.M. van Hilvoorde
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak
The student:
• is able to understand and conceptualize sport as a social phenomenon
• has understanding and knowledge of the main sport sociological issues and controversies
• is able to translate these issues and understands its consequences for sports policy.
• is able to understand and apply theories that conceptualize the relations between technology and sport
• is trained in critical reading and evaluation of papers from a conceptual and sport sociological perspective

Inhoud vak
Students get acquainted with general theories about sports and society, and are able to apply these theories on the following key issues:

• The organization and evolution of sport
• Connections between sport and other spheres of social life (cf. education, public health)
• Connections and interdependencies between sport and globalization, commercialization, technology and the media
• Relations between sport success, heroism and national pride
• The question if sports and politics can and/or should be kept separate
• The way in which elite sport enforces cultural ideologies concerning human bodies and deviance (in particular in relation to human enhancement, doping or the boundary between “able bodies” and “disabled

bodies”).

Onderwijsvorm
Amount of contact hours:
Lectures: 12 hours
Tutorials: 10 hours
Assessment: paper

Combination of Lectures and Tutorials

Toetsvorm
- paper/reviews

Literatuur
- Selection of relevant articles, lecture notes.

Vereiste voorkennis
Recommended background knowledge: Philosophy of sport.

Sport Psychology: from Evidence to Application

Vakcode	B_SPORTPSYEV ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. R.R.D. Oudejans
Examinator	dr. R.R.D. Oudejans
Docent(en)	dr. R.R.D. Oudejans
Lesmethode(n)	Hoorcollege, Werkcollege, Bijeenkomst
Niveau	500

Doel vak
The student is able to:
- give an overview of several psychological factors that play a role in sport, the assumed working mechanisms as well as ways of influencing these factors with mental training;
- give an overview of group dynamic processes in sport, theories on leadership and different coaching models.
- critically assess (recent) research literature in sport psychology on its thesis, content, empirical rigor and applicability;
- critically discuss (recent) research literature in sport psychology in a paper, culminating in the evaluation of the literature and a discussion of implications for sport (psychology) practice;
- critically assess and discuss papers of fellow students on contents, structure, writing and originality.
- link applied research to its theoretical background;
- discuss research on applied sport psychology;
- formulate advice in specific areas of applied sport psychology.
Furthermore, students will gain initial experience with applying mental training techniques and communication skills.

Inhoud vak
This course provides insight into research on (applied aspects) of sport psychology, particularly the areas of performance and social psychology.

Performance Psychology focuses on research, theory, and practice intended to improve performance in sport. Social Psychology focuses on individual and group processes in sport settings. This area applies social psychological principles in examining factors related to the athletes, coaches and teams. Some of the topics that will be discussed are: performing under pressure, attentional control, motivation, as well as the broad topic of ‘coaching’ in sport, particularly group dynamics, leadership and coaching behaviours. In addition to the lectures, two practicals are organized, one to experience and apply 'performance profiling' and 'mental imagery', and one to experience and apply coaching models and communication skills. After the practicals students have to prepare and submit their practical reports. Finally, the content is for a large part determined individually as each student writes a paper on a key topic in sport psychology.

Onderwijsvorm
lectures: 10 times 2 hours
practicals: 2 times 3 hours
discussion meeting: 1 meeting 4 hours
There are several lectures on topics in sport psychology and two practicals. Students will produce an individual paper on a topic in sport psychology, write two practical reports in small groups, and (individual) reviews of the papers of their fellow students. The papers will be discussed in discussion meetings at the end of the course. Participation in both the practicals and one discussion meeting is compulsory for students.

Toetsvorm
Students produce a paper (50% of the final grade), two practical reports (together 30% of the final grade) and reviews about papers of other students (20% of the final grade). The paper, the practical reports as well as the reviews must at least be of sufficient quality to pass the course.

Literatuur
- Course manual (Available on Blackboard);
- Jones, G. (1993). The role of performance profiling in cognitive behavioral interventions in sport. The Sport Psychologist, 7, 160-172. (Available on Blackboard);
- Murphy, S.M. & Martin, K.A. (2002). The use of imagery in sport. In: T. Horn (ed.) 2nd edition. Advances in sport psychology. Human Kinetics. p. 410-412; 416-417 and 431. (Available on Blackboard);
- Recent articles and book chapters on psychological factors in sport and sport psychology.

Background literature:
- Cox, R.H., Sport Psychology: Concepts and Applications, 6th edition. Boston: McGraw-Hill, 2007.
or
- Bakker, F.C. & Oudejans, R.R.D. (2012). Sportpsychologie. Nieuwegein: Arko Sports Media.

Vereiste voorkennis
Students should have basic knowledge and understanding of sport psychology as is available in textbooks such as Cox, R.H. (2007). Sport Psychology: Concepts and Applications, 6th edition. Boston: McGraw-Hill, or Bakker, F.C. & Oudejans, R.R.D. (2012). Sportpsychologie. Nieuwegein: Arko Sports Media.

Statistics for Experimental Research

Vakcode	B_STATEXPRES (900683)
Periode	Periode 4
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	dr. M.J.M. Hoozemans
Examinator	dr. M.J.M. Hoozemans
Docent(en)	dr. M.J.M. Hoozemans
Lesmethode(n)	Hoorcollege, Werkcollege, Computerpracticum
Niveau	400

Doel vak

On the basis of case descriptions and raw data the student is capable to:
• determine the research designs and choose, justify and perform the appropriate statistical analyses (t-tests or ANOVAs or their non-parametric counterparts) using SPSS.
• report the analyses and the results in the same way as is commonly done in methods and results sections of scientific journal articles.

Inhoud vak
Students will learn ins and outs of applying and interpreting statistical techniques that are common or are becoming common in experimental research. The topics covered in this course are:
• Research design
• Basic statistical principles (e.g. data exploration)
• Estimating a population mean from a sample
• Independent and paired t-tests and their associated confidence intervals
• Non-parametric difference tests
• Linear regression
• One-way ANOVA (between subjects and repeated measures)
• Factorial ANOVA (two-way between subjects, two-way repeated measures, two-way mixed design)
• Effect size
• Data transformations
There will be lectures and SPSS practical sessions for all the topics covered in the course.

Onderwijsvorm

Lectures (20 hours / 10 lectures)
Computer practicals (32 hours / 8 practicals)

Toetsvorm

The students have to take an examination. It will focus on t-tests, non-parametric difference tests, one-way ANOVA and factorial ANOVA.

Literatuur

Andy Field – Discovering Statistics using SPSS

Studentbegeleiding

Vakcode	B_STDBEG ()
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Nederlands
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	drs. M.G.J. Buijtenweg
Examinator	drs. M.G.J. Buijtenweg

Talent Identification and Development

Vakcode	B_TALDEVEL (900672)
Periode	Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. G.J.P. Savelsbergh
Examinator	prof. dr. G.J.P. Savelsbergh
Docent(en)	prof. dr. G.J.P. Savelsbergh
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak
Students are able to summarize and examine the implications of adopting a multi- disciplinary research perspective for the comprehensive study of talent development and identification, and identify and elaborate upon the limitations of existing (mono- disciplinary) research on talent identification and development (expert performance). Additionally, students are able to make recommendations for future research on understanding talent development and for implementing talent developmental programs.

Inhoud vak
In recent years, research on expertise and the identification and development of talent has tended to be mono- disciplinary. In the current course a multi- disciplinary approach is emphasized. The lectures discuss the environmental influences, but also deal with genetic issues and the interplay between the two from the various disciplines within human movements sciences among others, philosophy, psychology and physiology. The course addresses several issues, that all seem to play a part in talent identification and development. Like the amount of deliberate practice, the use of visual information, cognitive abilities, genetic make up or constraints, anthropometric characteristics, muscle structure and amount of fast and slow twitch muscle.

Onderwijsvorm
lecture
Six lectures provide the student with an introduction into the contemporary approaches to talent identification and development.

Toetsvorm
The course is concluded with a written test consisting of open- end questions.

Literatuur
A collection of recent theoretical and experimental papers from the scientific literature (details to be announced)

Vereiste voorkennis
None

Teacher Training at the Upper Secondary Level

Vakcode	B_DOCENTHBO (900630)
Periode	Ac. Jaar (september)
Credits	24.0
Voertaal	Nederlands
Faculteit	Faculteit der Bewegingswetenschappen
Lesmethode(n)	Werkcollege

Doel vak
Binnen de verschillende accenten bestaat voor de student de mogelijkheid zich te profileren in de richting van het beroep docent. Hiertoe dient de docentenopleiding gevolgd te worden. Reeds vele afgestudeerden zijn werkzaam als docent in het hoger beroepsonderwijs (hbo), onder meer aan de opleidingen Fysiotherapie en Lichamelijke opvoeding. Daar geven zij, afhankelijk van de richting, theorie- en vaardigheidslessen in vakken als anatomie, (inspannings)fysiologie, (sport)psychologie, gezondheidskunde, methodologie en bewegingsanalyse, begeleiden zij tutorgroepen en/of afstudeerstages en zijn zij actief betrokken bij onderwijsontwikkeling.
Het doel van de docentenopleiding is dat de studenten de competenties van een beginnende docent verwerven. Zodat zij over kennis, inzicht, vaardigheden en attituden beschikken die hen in staat stellen als docent te functioneren en hun taken en taakuitvoering kritisch te evalueren en te veranderen.

Inhoud vak
Het opleidingsprogramma bestaat uit de volgende onderdelen: vier didactische cursussen, een professionaliseringstraject, een onderwijsinnovatieproject en een stage. De didactische cursussen zijn erop gericht de studenten kennis, inzichten, vaardigheden en attituden te verschaffen die nodig zijn voor het voorbereiden, uitvoeren en evalueren van onderwijs. Hierbij gaat het voornamelijk om het voorbereiden, verantwoorden en verzorgen van lessen (hoorcolleges, doceerlessen, werkgroepbegeleiding en vaardigheidslessen), het begeleiden van individuele studenten en het ontwikkelen en afnemen van toetsen. Het professionaliseringtraject biedt ondersteuning bij je ontwikkeling tot hbo-docent. Voor het onderwijsinnovatieproject voeren studenten in een projectgroep een opdracht van een hbo-instelling

gericht op een onderwijsvernieuwing uit. De stage verschaft de studenten kennis en inzicht in de onderwijs- en lesgeefpraktijk op een hbo-opleiding alsmede vaardigheid in het geven van onderwijs. De stage is het onderdeel van de docentenopleiding waarin integratie van de theorie in de praktijk plaatsvindt: vrijwel alle cursussen lopen vooruit op of grijpen terug naar activiteiten die studenten in de stage ondernemen. De stage loopt van september tot en met april. In overleg met de stage-instelling maakt de student een rooster waarin hij aangeeft wanneer hij (gemiddeld 1 dag in de week) op de instelling aanwezig is. Tijdens de stage dienen zowel lessen geobserveerd als gedoceerd te worden. Minimaal één les staat onder supervisie van de docentenopleiding en één les wordt vakinhoudelijk beoordeeld door een vakinhoudelijk deskundige docent. Daarnaast wordt onder begeleiding van de stage-instelling en de docentenopleiding, in de stage gewerkt aan een aantal opdrachten.
Overzicht van de studieonderdelen:
• didactische basisprincipes
• onderwijs aan groepen
• toetsen en beoordelen
• studentbegeleiding
• professionaliseringstraject
• onderwijsinnovatieproject
• stage

Onderwijsvorm
Binnen de didactische cursussen vindt thuis kennisoriëntatie plaats aan de hand van opdrachten. Tijdens de bijeenkomsten staat veelal de praktische toepassing centraal en werken de studenten aan de hand van oefeningen/opdrachten veel met elkaar samen in subgroepjes. Deze werkwijze maakt het noodzakelijk dat de studenten elke bijeenkomst bijwonen en actief participeren; aanwezigheid is verplicht.

Toetsvorm
Om de docentenopleiding af te ronden dient de student aan de hand van een beoordelingsportfolio en een beoordelingsgesprek te bewijzen de docentcompetenties op het niveau van een beginnend docent te bezitten. Hiertoe zal de student voldoende bewijslast moeten verzamelen. Kenmerkend voor deze toetsvorm is dat de verantwoordelijkheid meer bij de student komt te liggen, aangezien deze deels zelf bepaalt hoe en waarmee hij de verschillende competenties onderbouwt. Een aantal bewijsstukken is voorwaarde om de docentenopleiding af te ronden.

Literatuur
De boeken en de handleidingen worden verkocht tijdens de bijeenkomsten. De kosten bedragen ongeveer EUR 225,- en dienen voor het eind van de reguliere cursusduur betaald te worden.

Overige informatie
Het ministerie van OC&W heeft in de jaren 90 regelingen opgesteld inzake de benoembaarheideisen voor docenten hbo. Een hbo-docent dient naast het bezit van een bewijs/verklaring van bekwaamheid (een getuigschrift van met goed gevolg afgelegd afsluitend examen Bewegingswetenschappen) ook in het bezit te zijn van een bewijs/verklaring van voldoende didactische voorbereiding. De benodigde didactische vaardigheden dient de docent op sommige hogescholen zich eigen te maken door het volgen van een didactische scholing (hbo-didactische cursus) nadat hij is aangesteld als docent binnen het hbo. Studenten die de docentenopleiding FBW met succes hebben afgerond wordt vrijstelling verleend voor de hbo-didactische cursus, mits zij niet langer dan vijf jaar na het afronden van de docentenopleiding met de hbo-didactische cursus beginnen.

Geïnteresseerden die hun Master of Doctoraal reeds behaald hebben en niet meer ingeschreven staan als student kunnen indien er plaats is aan de opleiding deelnemen als contractstudent. De kosten hiervoor worden geschat op € 2780,- te voldoen aan het begin van de opleiding.
De docentenopleiding start in september en wordt afgesloten in mei. De vaste lesdag op de VU is de vrijdag.

Afhankelijk van de beschikbaarheid van externe stageplaatsen en de begeleidingsmogelijkheden is er een flexibele bovengrens in toelatingsplaatsen. Bij meer aanmeldingen dan plaatsen kan de docentenopleiding besluiten een toelatingsassessment te laten plaatsvinden.
Aanmelding dient schriftelijk te gebeuren vóór 1 mei op een daarvoor bestemd formulier. Voor een volledige beschrijving van het opleidingsprogramma wordt verwezen naar het leerplan. Dit leerplan en het aanmeldingsformulier zijn te vinden op
http://www.exposz.nl/sport/docentenopleiding-fbw/

Writing and Designing a Research Proposal

Vakcode	B_WRITPROP ()
Periode	Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Bewegingswetenschappen
Coördinator	prof. dr. A.M.L. Kappers
Examinator	prof. dr. A.M.L. Kappers
Docent(en)	prof. dr. A.M.L. Kappers, K. Levels MSc
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak
This courses aims on writing a research proposal. Students learn what conditions must be met by a good research proposal and to put this knowledge into practice by writing its own research proposal.

Inhoud vak
Writing a research proposal is not just about having a good idea, but also about motivating and clearly formulating a research question and substantiate the methods used to answer the research question. This skill is required when you conduct research, for example during your research internship, but also when you want submit a grant proposal or need to get approval by an ethical committee.
In this course students learn how to write a research proposal. Also the process of applying for a grant will be discussed. Experienced researchers will explain which elements of a proposal are important for reviewers. The proposal can, if desired, be used as preparation for de research internship, which will start in period 4, but that is not mandatory.

Onderwijsvorm
Lectures
Working groups

Toetsvorm
Rating of the research proposal

Literatuur
Book: 'Reader friendly scientific douments', A, Bless & E, Hull. ISBN: 9085230950
Scientific papers