

Specialisatie Gezondheid en Revalidatie

Imaging Muscle Health

Volledige vakbeschrijving

Muscle health can be defined in many ways, but muscle function, muscle mass, strength, endurance/fatigue are all aspects that are highly important for muscle health. This course will focus on these aspects of muscle health using short, interactive lectures.

Furthermore, since different tests are available to assess each aspect of muscle function, the course contains three practical training sessions. Furthermore, three problem-based learning assignments will cover (clinically) relevant situations of changing muscle function, where students will need to apply their knowledge to the specific problem.

Lastly, a project will be performed in small groups, in which students will make a presentation including an instruction movie on a technique of choice to determine muscle function.

Doelstellingen van dit vak

Knowledge and understanding

- Understand how muscle mass and - metabolism are influencing muscle health in terms of strength, endurance, power and fatigue
- Understand how these factors of muscle health can be determined (by imaging-based and functional testing)
- Know the basic principles of imaging techniques such as MRI and MRS

Applying knowledge and understanding

- Apply the acquired knowledge to situations of changing muscle health like ageing or disease

Making judgements

- Evaluating the applicability (pro/cons) of various methods of determining muscle health for a given question

Communication

- Explain a technique to investigate muscle health in a clear and comprehensive way by making an instruction video

Learning skills

- Read and evaluate a scientific manuscript (critical reading)
- Write a scientific report (scientific writing, searching literature)

- Review and comment on a scientific report written by a peer (reviewing)
- Search for relevant information and report to a group (PBL in tutorial groups)
- Knowledge about design of experiments/testing (research methods and design)

Aanbevolen literatuur

-Skeletal Muscle Structure, Function, and Plasticity, pp. 1-90 (RL Lieber., 3rd edition 2009). - Physiology and exercise physiology literature -Loon et al., J. Applied Physiology, 1999, 87(4), 1413-1420. -Macauley et al. Diurnal variation in skeletal muscle and liver glycogen in humans with normal health and Type 2 diabetes. Clin Sci (Lond). 2015. 128(10):707-713. ..and others..!

HMS4501

Periode 1

2 sep 2019

25 okt 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coordinators:

- [E.M.J.M. Schillings](#)
- [B.C. Bongers](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, Paper(s), Patientcontact, Presentation(s), Skills, Training(s), Working visit(s)

Evaluatiemethoden:

Assignment, Attendance, Final paper, Portfolio, Presentation, Written exam

Trefwoorden:

-muscle function -muscle mass -(exercise)physiology -Biodex -MRI/MRS

Fac. Health, Medicine and Life Sciences

Physical Activity and Health

Volledige vakbeschrijving

This course will address two major themes that are highly related to each other. The first theme covers the beneficial effects of physical activity on health. Several keynote lectures (1 h) are delivered covering the different health aspects of physical activity including metabolic, cardiovascular and cognitive health and sit-less for health. The second major theme of the course is how physical activity can be accurately measured in daily life. For that, wearable sensors will be used and students will learn about different sensors that are available, how these sensors function and how data from these sensors can be analysed. For this, students will get to design their own research project where they can answer their research question using a tri-axial accelerometer (the MOX).

The course keynote lectures will mainly cover theoretical bases about how physical activity benefits health and how physical activity can be measured. The tutorial/project group meetings will be used to design the research projects, perform measurements, analyse the data and present the project

results.

Doelstellingen van dit vak

At the end of this course, students have gained knowledge and understanding of the following topics:

- Knowledge about design of experiments/testing (research methods and design)
- To test reproducibility and validity of physical activity data
- To test sensitivity and specificity of physical activity classification
- Oral presentation of obtained research data
- Writing a scientific report
- Learning skills
- Choosing the appropriate technique to quantify relevant aspects of physical activity
- The methodological quality of studies that use motion sensors
- Analysing and interpreting results from a physical activity experiment
- Collaborating effectively with fellow students and experts
- Communication
- Formulate a relevant research question related to physical activity and design an appropriate research protocol to answer this question
- Gathering and post-processing of physical activity data
- Making judgements
- Metabolic, cardiovascular and cognitive health effects of different aspects of physical activity
- Basic principles of accelerometry-based motion analysis and activity monitoring
- Underlying principles of signal analysis and basic signal processing methods (filtering, differentiation and integration)
- Experimental design and analysis aspects of research related to physical activity
- monitoring

HMS4502

Periode 1

2 sep 2019

25 okt 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [G. Plasqui](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Working visit(s), Paper(s), PBL, Presentation(s), Research

Evaluatiemethoden:

Attendance, Presentation, Written exam, Final paper

Trefwoorden:

physical activity assessment wearable sensors health

Fac. Health, Medicine and Life Sciences

Analysis and Restoration of Human Locomotion

HMS4503

Periode 2

28 okt 2019

20 dec 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [K. Meijer](#)

Fac. Health, Medicine and Life Sciences

Movement Disorders and Rehabilitation

Volledige vakbeschrijving

Knowledge transfer during this course will include classic Problem Based Learning (PBL), short lectures, project work and practicals. In addition, students will participate in interactive lectures and will participate in a House of Commons debate. Next to gathering knowledge, in this course the main focus is on logical reasoning and applying knowledge. Students are challenged to argue, discuss and interpret relevant topics in the field of rehabilitation.

During this course students write a research proposal in teams and an individual, substantiated essay with an assigned position (pro or con) in favor or against a highly relevant topic in the field of rehabilitation medicine.

The PBL cases will be centered around:

- analyze the complex relationship and discrepancy between functioning, activity, and participation in a (seemingly simple) gait-related neurological case
- analyzing association between pain and functioning and getting insight in biopsychosocial factors influencing pain and the negative consequences for the patient and society
- technology-supported training in complex upper extremity pathology: “(non-) sense of robotics and sensor technology in rehabilitation”.

Doelstellingen van dit vak

The aim of this course is threefold:

1. From a Bio-Psycho-Social perspective, in collaboration with multidisciplinary teams, students are able to critically analyze and describe complex health-related issues with negative impact on the musculoskeletal system and interpret within broader context which methodological approach is needed to quantify/measure this issue.
2. Students are able to consider, formulate and evaluate solutions for the above-mentioned impact of complex health-related issues regarding the musculoskeletal system.
3. Students will be acquainted with innovative technologies used in the domain of rehabilitation and are able to critically evaluate the usefulness of the deployment of such technologies in

Aanbevolen literatuur

1. Gatchel, R.J., et al., The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychol Bull*, 2007. 133(4): p. 581-624. 2. Heerkens Y, Hirs W, de Kleijn-de Vrankrijker M, Ravenberg D, TenNapel H. Nederlandse vertaling van de International Classification of Functioning, Disability and Health (ICF): Compilatie. Houten, Bohn Stafleu Van Loghum, 2002. 3. Lemmens RJM, Timmermans AAA, Janssen-Potten YJM, Smeets RJEM, Seelen HAM. Valid and reliable instruments for arm-hand assessment at ICF activity level in persons with hemiplegia: a systematic review. *BMC Neurology* 2012,12:21. 4. Main CJ and Spanswick CC (2000). *Pain Management: An Interdisciplinary Approach* 5. Perry J, Burnfield J. (2010) *Gait analysis: normal and pathological function*. Second edition. Thorofare, Slack.

HMS4504

Periode 2

28 okt 2019

20 dec 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- E.A.A. Rameckers

Onderwijsmethode:

Assignment(s), Work in subgroups, Lecture(s), Patient contact, Paper(s), PBL, Research, Skills, Working visit(s)

Evaluatiemethoden:

Assignment, Attendance, Final paper

Fac. Health, Medicine and Life Sciences

Designing Intervention Research

Volledige vakbeschrijving

(including healthy aging, prevention, etc).general health promotion and/or (diabetes, obesity, CVD, but also cancer, COPD, RA, etc) chronic metabolic disorders , rehabilitation, sport and exercise sciences in an appropriate population. Such an intervention can be both acute (i.e. studying mechanisms and/or potential strategies for more long-term application), short-term, or long-term (i.e. studying both mechanisms and actual outcome). The research hypotheses set in these grant applications are to be integrated in the field of intervention to allow biological adaptation and improved functional capacity to an exercise stimulus will be addressed from the athletes' perspective towards the clinical patient. Students will write a research grant application in which they will describe a self-designed (exercise and/or nutritional) intervention to improve health and/or (sports)performance in various populations. The permissive role of nutritional interventions to define the most effective interventions programs to be effective it is essential to set well-defined goals specific for each target population. In this course we will integrate the different aspects of exercise and nutritional intervention need to be designed on a scientific basis to improve health and/or

functional performance. For such interventions The important aspects of physical activity as a means to promote mental and physical well-being have been well described in the Bachelor "Movement Sciences". In our Western society the development of chronic metabolic diseases, like obesity and type 2 diabetes, is reaching epidemic proportions. Though part of this epidemic can be ascribed to the aging of the population, an alarming increase in the incidence of chronic metabolic disorders (particularly type 2 diabetes) has been reported among children and adolescents. The current epidemic is clearly associated with our sedentary lifestyle combined with an excessive energy intake. Therefore, combined exercise and nutritional

Doelstellingen van dit vak

Students who have successfully finished this course will be able to:

1. design effective physical activity and/or nutritional interventions on a scientific basis
2. integrate the knowledge concerning the functional and/or biological adaptation to exercise - and nutrition
3. select the most appropriate intervention for the desired effect: from athlete to patient
4. select the appropriate research proposal to test the efficacy of specific nutrition and/or - research to large scale population studies in vivo exercise interventions: from invasive
5. define the relevant outcome parameters
6. write, present and defend a research grant proposal within this field of research

Aanbevolen literatuur

- Guyton & Hall: Textbook of medical physiology. 10th ed. Saunders co. 2000, ISBN 0-8089-2187-8 - Maughan, Gleeson & Greenhaff; Biochemistry of exercise and training; Oxford university press, ISBN 0-19 262741-4 - McArdle WD, Katch FI, Katch VL: Exercise physiology, 5th ed. Lippincott Williams & Wilkins, 2001, ISBN 0-7817-2544-5 - McGinnis, P.M. Biomechanics of sport and exercise. Champaign, Ill, Human Kinetic Publishers, 1999 - Wasserman K. Principles of exercise testing and interpretation. Philadelphia: Lea & Febiger, 1994 - Passmore R, Eastwood MA. Davidson and Passmore, human nutrition and dietetics. Edinburgh: Churchill Livingstone, 1986 - Ellenberg M, Rifkin H and Porte D. Ellenberg & Rifkin's diabetes mellitus, 5th edition, Stamford: Appleton & Lange, 1997. - Shils ME, Young VR, Olson JA, Shike M. Modern nutrition in health and disease. Philadelphia: Lea and Febiger, 1994. - Ziegler EE, Flier LJ (eds). Present knowledge in nutrition. Washington: ILSI press/International Life Sciences Institute, 1996.

HMS4001

Periode 3

6 jan 2020

31 jan 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [T. Snijders](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, Paper(s), PBL, Presentation(s)

Master Human Movement Sciences

Evaluatiemethoden:

Assignment, Final paper, Participation, Portfolio, Presentation

Trefwoorden:

Intervention research Exercise intervention Methodology Presentation Research proposal

Fac. Health, Medicine and Life Sciences

Reviews

Volledige vakbeschrijving

The aim of this course is for you to formulate such a research question and to find, select, read and evaluate scientific literature critically. You will also learn how to acquire skills in reporting on the results of this process and in providing and receiving peer feedback. The final end product will be the writing of an actual systematic review, following the standard steps described in literature.

In this course, all information and communication will be provided through a completely electronic (online) learning environment. The entire course is designed to guide you step by step through the process. As such, no presence at UM is required, enabling students to simultaneously start with their placement independent of whether this will be at UM or external (e.g. abroad).

Doelstellingen van dit vak

Knowledge and understanding; after following this course, you are able to:

- Application of knowledge and understanding; you can:
- Making judgements; you are able to:
- Communication; you are able to:

Learning skills; you can:

- Apply the content of this module in given situations and in professional life

Aanbevolen literatuur

For conducting the systematic review, we recommend that you read the following references: - Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from <http://handbook-5-1.cochrane.org/>. - Liberati, A., Altman, D.G., Tetzlaff, J., Mulrow, C., Gøtzsche, P.C., Ioannidis, J.P.A., Clarke, M., Devereaux, P.J., Kleijnen, J., Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *British Medical Journal*, 39, b2700 doi: 10.1136/bmj.b2700. - Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., for the PRISMA Group (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *British Medical Journal*, 339, b2535 doi: 10.1136/bmj.b2535. - Zaza, S., Wright-De Agüero, L.K., Briss, P.A., Truman, B.I., Hopkins, D.P., Hennessy, M.H., Sosin, D.M., Anderson, L., Carande-Kulis, V.G., S.M. Teutsch, Pappaioanou, M. (2000). Data Collection Instrument and Procedure for Systematic Reviews in the Guide to Community Preventive Services. *American Journal of Preventive Medicine*, 18, 1S, 44-74.

HMS4707

Master Human Movement Sciences

Periode 4

3 feb 2020

3 apr 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [C. McCrum](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Paper(s)

Evaluatiemethoden:

Final paper, Participation

Trefwoorden:

systematic review, literature search, PRISMA, PICOS

Fac. Health, Medicine and Life Sciences

Placement and Thesis

Volledige vakbeschrijving

During the second semester of the master's year students will perform a research project. The aim of this project is to provide students with experience in subsequent aspects of scientific research. The students select a research project themselves. This project can be carried out at departments in the university or university hospital, but also at other national or international universities or (research) institutes, or research-driven (sports or health) organisations. The opportunity to go abroad for their placement provides students with a great way of gaining international experience, broadening their academic as well as their 'life' perspectives, and (based on experiences from many previous students) helps them prepare for an international career. The experimental work for the placement is generally done on an individual basis (under supervision), but can also be accomplished in 'teams' of 2 or (occasionally) more students; however the final thesis, which will be the report of this study, will have to be an individual product. To allow proper and timely preparation for the research project, students will select a research topic and supervisor during the first period of the master year (september/november). To this end, various running projects that can place an intern will be advertised, but students can also look for other options themselves.

In close consultancy with their supervisor, students write and agree upon a specific research question, select adequate methods to perform the experiments and chose appropriate techniques for analysing the data, including statistical analyses. The thesis will have the layout of a scientific paper from a specific Journal. Specific guidelines for the research placement and thesis are available.

The placement and thesis period provides 24 ECTS (i.e., 16 full time weeks), which is divided over an 8 week start-up period in which a parttime course is also performed, followed by a 12 wk full time period.

Doelstellingen van dit vak

Students who have successfully finished this part of the master programme are able to:

Master Human Movement Sciences

- Derive hypotheses for a study from current knowledge
- Design and perform a research project
- Analyse and interpret results of an experiment
- Present results in an organized and structured way
- Discuss the data and relate results and conclusions to initial hypotheses
- Write a scientific paper

HMS4003

Jaar

1 sep 2019

31 aug 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

24.0

Taal van de opleiding:

Engels

Coördinator:

- [L.B. Verdijk](#)

Onderwijsmethode:

Paper(s), Research

Evaluatiemethoden:

Final paper, Participation

Trefwoorden:

placement, Internship, Thesis, Research

Specialisatie Sport en Voeding

Fac. Health, Medicine and Life Sciences

Nutrition to Fuel Sports Performance

Volledige vakbeschrijving

One of the main themes in exercise physiology and sports nutrition is the energy utilization of the body (mainly skeletal muscle) to sustain a certain type of physical activity. This course will focus on the energy systems involved in sport performance and how exogenous and endogenous energy sources can be used to modulate substrate utilization and performance. The course contains three cases in which it will be discussed how endogenous energy sources can limit performance, how exogenous energy sources can support performance, and whether high endogenous stores or exogenous energy provision may limit training adaptations. Topics that will be addressed are the energy systems, the role of carbohydrates in exercise performance and recovery, the role of fat in exercise performance, the role of energy intake and hydration, and how to measure substrate utilization during exercise.

Doelstellingen van dit vak

Knowledge and comprehension

At the end of the course the student should understand:

- The endogenous energy systems and the limiting energy system in relation to different sports and training adaptation.
- How nutrition can impact substrate utilization.
- The use of carbohydrates before, during, and after exercise.
- How nutrition can be used to improve performance.
- Methodology commonly used in relation to substrate utilization and endurance type activities, including VO₂max, indirect calorimetry, and (glucose) tracer methodology.

Applying knowledge and understanding

At the end of the course students should be capable of applying the above-mentioned knowledge:

- Conduct measurements of substrate utilization and process data.
- Translate scientific literature into practical recommendations.
- Apply academic skills like: critical reading, reviewing, and writing; argumentation.

Making judgements

At the end of the course the student should be capable of:

- Critically evaluate nutritional intervention programs to improve sports performance and judge the quality of measurements and instruments used.
- Summarize and critically review literature (critical reading).
- Identify opportunities to improve sports performance through optimal balance between training and nutrition, with a focus on nutrition as a fuel.

Communication

At the end of the course the student should be able to:

- Write scientific reports.
- Effectively and professionally communicate in project and tutorial groups.

Learning skills

At the end of the course the student should be capable of:

- Collaborate and discuss knowledge in a project team..
- Independently study international literature related to human movement performance and (sports) nutrition.
- Searching and referencing scientific literature.
- Review and comment on a scientific report written by a peer.

Aanbevolen literatuur

Basic literature: - McArdle, exercise physiology, fifth edition, Chapter 1, 6, 7 and 18 - Guyton, textbook of medical physiology, chapter 67 and 68

25 okt 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [R.C.R. Meex](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, Paper(s), PBL, Presentation(s), Skills

Evaluatiemethoden:

Assignment, Attendance, Final paper, Participation, Written exam

Fac. Health, Medicine and Life Sciences

Sports Supplements and Ergogenic Aids

Volledige vakbeschrijving

In the field of Sports and Nutrition, much attention is devoted to the potential of specific foods or substances to boost performance. While most academics and well-educated sport dieticians would agree that these substances should only be discussed when proper 'normal' nutrition is first optimized, they do represent an important topic within the field, both from a scientific and from a practical point of view. As an example, the finding that nitrate intake results in a reduction in the oxygen consumption during submaximal exercise has quickly elicited a widespread research effort into the potential ergogenic and health promoting effects of dietary nitrate supplementation. At the same time (long before evidence-based recommendations were available) a huge number of athletes started to adopt nitrate supplementation into their daily routine. Therefore, the central theme in this course is "supplements and nutraceuticals that have possible ergogenic effects". What is available, what is the evidence, what works, how and when, and -not trivial- what does not work? The course contains three cases which will discuss various supplements. During the practicals, various different performance measures will be introduced and practiced, and within a project team, students will address the use of these measures in relation to a specific supplement of their choice. Topics that will be addressed include nitrate, creatine, carnitine, buffers (sodium bicarbonate), and ketones, but also vitamins, minerals, and anti-oxidants will be touched upon.

Doelstellingen van dit vak

Knowledge and understanding- The proposed mechanism of action and ergogenic effectiveness of the most popular sport supplement, including caffeine, creatine, sodium bicarbonate, and nitrate. - The pros and cons (including limitations) of physiological tests commonly used to assess functional performance in a sport-specific context. - How to determine and interpret validity and (test-retest) reliability of such physiological tests. - Provide evidence-based recommendations on the use of caffeine, creatine, sodium bicarbonate and nitrate in relation to specific sport disciplines. - Conduct nutritional interventions and assess efficacy for sports performance enhancement. Applying knowledge and understanding- Identify opportunities to improve sports performance through sport supplements and ergogenic aids. - Critically evaluate nutritional intervention programs to improve sports performance and judge the quality of measurements and instruments used. Making judgements- Effectively and professionally communicate in project and tutorial groups. - Write a

scientific essay.- Present a study plan to evaluate the efficacy of sport supplements. Communication- Independently study international literature related to human movement performance and sport supplements- Knowledge about design of experiments/testing (research methods and design) Learning skills

Aanbevolen literatuur

Apart from focusing on finding literature through pubmed, these are examples of relevant textbooks:

- Jeukendrup A, Gleeson M. Sport Nutrition; an introduction to energy production and performance, 2nd ed. Human Kinetics 2010. (Ch 10: Nutrition Supplements).
- McArdle WD, Katch FI, Katch VL. Exercise Physiology; nutrition, energy and human performance. 8th ed. Wolters Kluwer-Lippincott Williams and Wilkins 2014. (e.g. Ch 23: Special aids to exercise training and performance).
- Australian Institute of Sports. Physiological tests for Elite Athletes, 2nd ed. Human Kinetics, 2013

HMS4602

Periode 1

2 sep 2019

25 okt 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [L.J.C. van Loon](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Working visit(s), Paper(s), PBL, Presentation(s), Research, Skills

Evaluatiemethoden:

Assignment, Attendance, Participation, Presentation, Written exam

Trefwoorden:

sport supplements, ergogenic, performance enhancement

Fac. Health, Medicine and Life Sciences

Nutrition to Support Training Adaptation

Volledige vakbeschrijving

For athletes to become world-class in their sport, there needs to be an optimal balance between talent, commitment and devotion, and training. Indeed, exercise physiologists and nutritionists alike would agree that the physiological, structural and functional adaptation to (specific) training represents the key factor in the development of a gifted junior athlete toward an adult elite champion. However, in allowing the body to optimally adapt to a specific training regimen, proper nutrition is also essential. As such, this course is centered on training adaptation and how nutrition can support and enhance training adaptation. The course contains three cases in which it will be discussed how the body (with skeletal muscle as main tissue) adapts to different sports/training programs and how nutrition is more than just a performance fuel; i.e., how can nutrition be used to augment the adaptive response to exercise training, with a focus on protein nutrition. Thus, the course builds on the knowledge gained in course HMS4601. Topics that will be addressed in this

course are muscle mass, structure and function, basic principles of training, nutrition to augment the adaptive training response, and nutrition during weight loss and injuries. Furthermore, different recovery strategies will be discussed and a practical experiment on cooling strategies will be performed.

Doelstellingen van dit vak

Knowledge&understanding

- The basic principles of training, and the adaptive response to training.
- How nutrition can modulate the adaptive response to training.
- The use of protein in training adaptations.
- The role of post-exercise recovery in training adaptations.
- Methodological/statistical methods commonly used in relation to assessing training adaptations and the effects of nutrition on exercise adaptation, including (amino acid) tracer methodology, muscle tissue analyses, data processing , and repeated measures analyses.

Applying knowledge&understanding

- Design and interpret acute and long-term studies that assess training adaptation, as well as nutritional means to augment training adaptation.
- Design and conduct studies to evaluate the effect of recovery strategies.
- Apply academic skills like: formulating a hypothesis, writing.
- Interpret the pros and cons of data processing steps to reduce data load (e.g. selection of time points, nr of subsequent measures needed, etc).

Making judgements

- Critically evaluate training programs and judge the applicability (pros/cons, limitations) of measurements and instruments used.
- Critically evaluate nutritional interventions and their effectiveness to augment training adaptations.
- Critically evaluate recovery strategies and their effectiveness to augment training adaptations.
- Identify opportunities to improve sports performance through an optimal balance between training and nutrition, with a focus on nutrition to support and/or augment training adaptations.

Communication

- Write scientific reports and give scientific presentations.
- Effectively and professionally communicate in project and tutorial groups.

Learning skills

- Independently study international literature related to human movement performance, training adaptations, and (sports) nutrition

Aanbevolen literatuur

Apart from focusing on finding literature through pubmed, these are exmples of relevant textbooks:

- Jeukendrup A, Gleeson M. Sport Nutrition; an introduction to energy production and performance,

Master Human Movement Sciences

2nd ed. Human Kinetics 2010. (Ch 7: Protein and amino acids and Ch 11: Weight management). • McArdle WD, Katch FI, Katch VL. Exercise Physiology; nutrition, energy and human performance. 8th ed. Wolters Kluwer-Lippincott Williams and Wilkins 2014. (Ch 18, 21,22, 29).

HMS4603

Periode 2

28 okt 2019

20 dec 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [L.B. Verdijk](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, Paper(s), PBL, Skills, Training(s), Presentation(s)

Evaluatiemethoden:

Assignment, Attendance, Participation, Presentation, Written exam

Trefwoorden:

Exercise Training, resistance, endurance, protein metabolism, recovery

Fac. Health, Medicine and Life Sciences

Sports and Nutrition: Putting Science into Practice

Volledige vakbeschrijving

The central theme in this course is the translation from sport & nutrition research into practical guidelines for athletes. The purpose of this topic is to translate the knowledge gained in the other courses into practical guidelines tailored for the athlete. The course contains three cases in which a nutritional plan will be designed for athletes from different sports, taking into account their training practices. But the course also evolves around individualization or personalized nutrition depending on factors that go beyond the specific sport discipline, i.e., gender, ethnic background, culture, etc. Topics that will be addressed are popular diets, how dietary needs differ between persons, sports, and training phases, dietary assessment and how to communicate with athletes and be part of a larger coaching team.

Doelstellingen van dit vak

At the end of this course, students have gained knowledge and understanding of the following topics:

- nutritional needs of athletes and how these differ per sport and per individual athlete. The
- How to determine the nutritional intake of athletes.
- How to make a food plan for athletes both for short and long term.
- Design and conduct customized nutritional plans for athletes from different sports and evaluate their applicability.
- Apply scientific knowledge in a practical sports environment.

Master Human Movement Sciences

- Synthesize and critically judge literature and translate to practical recommendations.
- Identify opportunities to improve sports performance through exercise and nutrition and translate to practical sports environments and/or individual athletes.
- Discuss and communicate with coaches and athletes.
- Write academic essays.
- Independently study international literature related to human movement performance and (sports) nutrition and translate scientific findings to practical recommendations.

Aanbevolen literatuur

• Burke L. Practical Sports Nutrition. Human Kinetics, 2007. • Jeukendrup A. A Step Towards Personalized Sports Nutrition: Carbohydrate Intake During Exercise. Sports Med. 2014; 44(Suppl 1): 25-33. • Crighton B, Close GL, Morton JP. Alarming weight cutting behaviours in mixed martial arts: a cause for concern and a call for action. Br J Sports Med. 2016 Apr;50(8):446-7. • Wardenaar FC, Steennis J, Ceelen IJ, Mensink M, Witkamp R, de Vries JH. Validation of web-based, multiple 24-h recalls combined with nutritional supplement intake questionnaires against nitrogen excretions to determine protein intake in Dutch elite athletes. Br J Nutr. 2015 Dec 28;114(12):2083-92. • Maughan RJ, Burke LM. Practical nutritional recommendations for the athlete. Nestle Nutr Inst Workshop Ser. 2011;69:131-49.

HMS4604

Periode 2

28 okt 2019

20 dec 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [J. Trommelen](#)

Onderwijsmethode:

Work in subgroups, Lecture(s), Paper(s), PBL, Working visit(s)

Evaluatiemethoden:

Assignment

Trefwoorden:

- practice - coaching - personalised nutrition - nutrition intake

Fac. Health, Medicine and Life Sciences

Designing Intervention Research

Volledige vakbeschrijving

(including healthy aging, prevention, etc).general health promotion and/or (diabetes, obesity, CVD, but also cancer, COPD, RA, etc) chronic metabolic disorders , rehabilitation, sport and exercise sciences in an appropriate population. Such an intervention can be both acute (i.e. studying mechanisms and/or potential strategies for more long-term application), short-term, or long-term (i.e. studying both mechanisms and actual outcome). The research hypotheses set in these grant applications are to be integrated in the field of intervention to allow biological adaptation and

improved functional capacity to an exercise stimulus will be addressed from the athletes' perspective towards the clinical patient. Students will write a research grant application in which they will describe a self-designed (exercise and/or nutritional) intervention to improve health and/or (sports)performance in various populations. The permissive role of nutritional interventions to define the most effective interventions programs to be effective it is essential to set well-defined goals specific for each target population. In this course we will integrate the different aspects of exercise and nutritional intervention need to be designed on a scientific basis to improve health and/or functional performance. For such interventionsThe important aspects of physical activity as a means to promote mental and physical well-being have been well described in the Bachelor "Movement Sciences". In our Western society the development of chronic metabolic diseases, like obesity and type 2 diabetes, is reaching epidemic proportions. Though part of this epidemic can be ascribed to the aging of the population, an alarming increase in the incidence of chronic metabolic disorders (particularly type 2 diabetes) has been reported among children and adolescents. The current epidemic is clearly associated with our sedentary lifestyle combined with an excessive energy intake. Therefore, combined exercise and nutritional

Doelstellingen van dit vak

Students who have successfully finished this course will be able to:

1. design effective physical activity and/or nutritional interventions on a scientific basis
2. integrate the knowledge concerning the functional and/or biological adaptation to exercise - and nutrition
3. select the most appropriate intervention for the desired effect: from athlete to patient
4. select the appropriate research proposal to test the efficacy of specific nutrition and/or - research to large scale population studies in vivo exercise interventions: from invasive
5. define the relevant outcome parameters
6. write, present and defend a research grant proposal within this field of research

Aanbevolen literatuur

- Guyton & Hall: Textbook of medical physiology. 10th ed. Saunders co. 2000, ISBN 0-8089-2187-8 - Maughan, Gleeson & Greenhaff; Biochemistry of exercise and training; Oxford university press, ISBN 0-19 262741-4 - McArdle WD, Katch FI, Katch VL: Exercise physiology, 5th ed. Lippincott Williams & Wilkins, 2001, ISBN 0-7817-2544-5 - McGinnis, P.M. Biomechanics of sport and exercise. Champaign, Ill, Human Kinetic Publishers, 1999 - Wasserman K. Principles of exercise testing and interpretation. Philadelphia: Lea & Febiger, 1994 - Passmore R, Eastwood MA. Davidson and Passmore, human nutrition and dietetics. Edinburgh: Churchill Livingstone, 1986 - Ellenberg M, Rifkin H and Porte D. Ellenberg & Rifkin's diabetes mellitus, 5th edition, Stamford: Appleton & Lange, 1997. - Shils ME, Young VR, Olson JA, Shike M. Modern nutrition in health and disease. Philadelphia: Lea and Febiger, 1994. - Ziegler EE, Flier LJ (eds). Present knowledge in nutrition. Washington: ILSI press/International Life Sciences Institute, 1996.

HMS4001

Periode 3

6 jan 2020

31 jan 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Master Human Movement Sciences

Taal van de opleiding:

Engels

Coördinator:

- [T. Snijders](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, Paper(s), PBL, Presentation(s)

Evaluatiemethoden:

Assignment, Final paper, Participation, Portfolio, Presentation

Trefwoorden:

Intervention research Exercise intervention Methodology Presentation Research proposal

Fac. Health, Medicine and Life Sciences

Reviews

Volledige vakbeschrijving

The aim of this course is for you to formulate such a research question and to find, select, read and evaluate scientific literature critically. You will also learn how to acquire skills in reporting on the results of this process and in providing and receiving peer feedback. The final end product will be the writing of an actual systematic review, following the standard steps described in literature.

In this course, all information and communication will be provided through a completely electronic (online) learning environment. The entire course is designed to guide you step by step through the process. As such, no presence at UM is required, enabling students to simultaneously start with their placement independent of whether this will be at UM or external (e.g. abroad).

Doelstellingen van dit vak

Knowledge and understanding; after following this course, you are able to:

- Application of knowledge and understanding; you can:
- Making judgements; you are able to:
- Communication; you are able to:

Learning skills; you can:

- Apply the content of this module in given situations and in professional life

Aanbevolen literatuur

For conducting the systematic review, we recommend that you read the following references: - Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from <http://handbook-5-1.cochrane.org/>. - Liberati, A., Altman, D.G., Tetzlaff, J., Mulrow, C., Gøtzsche, P.C., Ioannidis, J.P.A., Clarke, M., Devereaux, P.J., Kleijnen, J., Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. British Medical Journal, 39, b2700 doi: 10.1136/bmj.b2700. - Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., for the PRISMA Group

(2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *British Medical Journal*, 339, b2535 doi: 10.1136/bmj.b2535. - Zaza, S., Wright-De Aguero, L.K., Briss, P.A., Truman, B.I. Hopkins, D.P., Hennessy, M.H., Sosin, D.M., Anderson, L. Carande-Kulis, V.G., S.M. Teutsch, Pappaioanou, M. (2000). Data Collection Instrument and Procedure for Systematic Reviews in the Guide to Community Preventive Services. *American Journal of Preventive Medicine*, 18, 1S, 44-74.

HMS4707

Periode 4

3 feb 2020

3 apr 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [C. McCrum](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Paper(s)

Evaluatiemethoden:

Final paper, Participation

Trefwoorden:

systematic review, literature search, PRISMA, PICOS

Fac. Health, Medicine and Life Sciences

Placement and Thesis

Volledige vakbeschrijving

During the second semester of the master's year students will perform a research project. The aim of this project is to provide students with experience in subsequent aspects of scientific research. The students select a research project themselves. This project can be carried out at departments in the university or university hospital, but also at other national or international universities or (research) institutes, or research-driven (sports or health) organisations. The opportunity to go abroad for their placement provides students with a great way of gaining international experience, broadening their academic as well as their 'life' perspectives, and (based on experiences from many previous students) helps them prepare for an international career. The experimental work for the placement is generally done on an individual basis (under supervision), but can also be accomplished in 'teams' of 2 or (occasionally) more students; however the final thesis, which will be the report of this study, will have to be an individual product. To allow proper and timely preparation for the research project, students will select a research topic and supervisor during the first period of the master year (september/november). To this end, various running projects that can place an intern will be advertised, but students can also look for other options themselves.

In close consultancy with their supervisor, students write and agree upon a specific research question, select adequate methods to perform the experiments and chose appropriate techniques for analysing the data, including statistical analyses. The thesis will have the layout of a scientific paper from a specific Journal. Specific guidelines for the research placement and thesis are available. The placement and thesis period provides 24 ECTS (i.e., 16 full time weeks), which is divided over

Master Human Movement Sciences

an 8 week start-up period in which a parttime course is also performed, followed by a 12 wk full time period.

Doelstellingen van dit vak

Students who have successfully finished this part of the master programme are able to:

- Derive hypotheses for a study from current knowledge
- Design and perform a research project
- Analyse and interpret results of an experiment
- Present results in an organized and structured way
- Discuss the data and relate results and conclusions to initial hypotheses
- Write a scientific paper

HMS4003

Jaar

1 sep 2019

31 aug 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

24.0

Taal van de opleiding:

Engels

Coördinator:

- [L.B. Verdijk](#)

Onderwijsmethode:

Paper(s), Research

Evaluatiemethoden:

Final paper, Participation

Trefwoorden:

placement, Internship, Thesis, Research

Specialisatie Fysiotherapie

Fac. Health, Medicine and Life Sciences

Growth and Ageing from a Systems Biology Perspective

Volledige vakbeschrijving

At first glance, growth and aging appear to be opposites. Growth is the energy-driven synthesis of macromolecules from simple nutrients, an increase of order and a decrease of entropy. Aging is decay, a loss of order and a rise of entropy. Seemingly, growth and aging are mutually exclusive. Forever proliferating cells, such as legendary hydras, do not show signs of aging. In contrast, when an organism ceases to grow, aging follows. However, manipulations that decrease growth also decrease aging and prolong life span. For example, calorie restriction (reduced nutrient intake) reduces growth and increases longevity in diverse species from yeast to mice.

In the first part of this course growth of organisms (case example the human) will be studied, while

in the second part old age and degeneration of the organism will be studied

To probe the complexity of the growth and aging process a combination of approaches will be sought that can effectively combine the respective strengths of the reductionist and integrative strategies via

- detailed investigation of the intracellular mechanisms that play a role in growth and aging and age-related damage,
- study of how the accumulated damage in cells, which may vary considerably between one individual cell and its neighbours, gives rise to age-related declines in tissue function, and
- how these lower level changes both affect the viability of the organism as a whole as well as how systemic factors, such as hormones, provide scope for integration across multiple levels.

The necessary integration to deliver this joined-up understanding of aging is offered by the multi-disciplinary framework of systems biology (where possible). Systems biology differs from integrative physiology and functional genomics in the focus, which is placed on a particularly close coupling between experiment, theory and quantitative modelling.

Finally the course closes with cases illustrating the complexity of an evolving organism and pathology examples.

Doelstellingen van dit vak

At the end of this course, students have gained knowledge and understanding of the following topics:

Knowledge and understanding

The student...

- has reached an adequate level regarding knowledge of and insight in the growth and aging mechanisms of a human organism system
- is to be able to identify, analyse and evaluate complex multi-dimensional health-related problems linked to the aging process
- can through logical reasoning, identify relationships between growth and aging related disorders on the one hand, and possible consequences of such disorders at the level of activity and participation on the other hand.
- Can use knowledge of the systems biology approach relevant for the physiotherapy domain

Applying knowledge and understanding

The student is able to...

- apply the systems biology model to interpret multi-dimensional health-related problems that arise from growth and aging disorders
- apply knowledge to explain functioning of patients in all age categories

Making judgments

The student is able to...

- argue between normal prognosis in growth and aging related issues and abnormal prognosis

Master Human Movement Sciences

- assess with the use of measurement instruments complex aging related problems and quantify its impact

Communication

The student is able...

- to communicate complex health-related problems due to growth and aging to peers, laymen and in multidisciplinary expert teams

Aanbevolen literatuur

All literature and references to other sources will be available from a reference list; e.g.;

- Spirduso, W. W., Francis, K. L., & MacRae, P. G. (1995). Physical dimensions of aging.
- Keevil VL, Romero-Ortuno R. Ageing well: a review of sarcopenia and frailty. Proc Nutr Soc. 2015 Nov;74(4):337-47.
- Kim TN, Choi KM. The implications of sarcopenia and sarcopenic obesity on cardiometabolic disease. J Cell Biochem. 2015 Jul;116(7):1171-8.
- Stewart VH, Saunders DH, Greig CA. Responsiveness of muscle size and strength to physical training in very elderly people: a systematic review. • Scand J Med Sci Sports. 2014 Feb;24(1):e1-10.
- Thompson RB, Tomczak CR, Haykowsky MJ. • Evaluation of Cardiac, Vascular, and Skeletal Muscle Function With MRI: Novel Physiological End Points in Cardiac Rehabilitation Research. Can J Cardiol. 2016 Oct;32(10S2):S388-S396.

HMS4801

Periode 1

2 sep 2019

25 okt 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [M.M.J. Caron](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, PBL, Presentation(s), Skills

Evaluatiemethoden:

Assignment, Attendance, Written exam

Trefwoorden:

Physiology of growth and aging, sarcopenia, Physical Inactivity, nutrition, homeostasis, allostasis, muscle and bone, developmental disorders, developmental psychology.

Fac. Health, Medicine and Life Sciences

The Enterpreneurial Healthcare Professio

Volledige vakbeschrijving

Organisations and professionals in healthcare in the European countries have to respond to a number of developments in order to survive or grow. These developments, especially the increasing need for health services, the growing complexity and the necessity of cost containment offer exciting

opportunities for entrepreneurial professionals. For this course, entrepreneurship in healthcare entails that healthcare professionals are capable of discovering and taking the opportunities to create value (=providing a product or service that a customer needs/wants) for patients, thereby also achieving their own ambitions. Entrepreneurship usually also includes the actual creation of value by developing a product or service, by designing a value creation strategy, and by creating an (inter)organisational entity that provides the product or service to the customer. This course draws the boundary at outlining products or services for patients, strategies and (inter)organisational arrangements.

To enable the students to gain knowledge and skills that will help them on their way to become entrepreneurial professionals, this course will introduce the students to value creation and to the features of healthcare systems, (inter)organisational arrangements in healthcare, and of strategies for value creation. All these features are considered from one and the same perspective: Which opportunities for value creation do these features provide for the student as a future entrepreneurial professional in healthcare and which threats should this future professional deal with? What are the advantages and disadvantages of (inter)organisational arrangements and strategies for value creation?

During the course, students will make individual assignments and they will write an individual essay based on these assignments. As a member of a study team, they will also work on project assignments and on a group paper about these assignments.

Doelstellingen van dit vak

Knowledge and insights

The student has knowledge of:

- The characteristics of healthcare systems.
- The positions/functions of healthcare professionals in the healthcare system.
- Theories about entrepreneurial professionals, value creation, (inter)organisational arrangements and strategies for value creation.
- The competencies and other personal characteristics of entrepreneurial professionals.

Application of knowledge and insights

The student is able to:

- Explain how opportunities, threats, strengths and weaknesses for value creation can be discovered by entrepreneurial healthcare professionals and how they can take advantage of their discoveries.
- Use the gained knowledge to outline products or services for patients, strategies and (inter)organisational arrangements for value creation.

Forming opinions

The student:

- Has a scientific - positive and critical - attitude.
- Is able to critically assess the validity and utility of the gained knowledge.

Communication

The student:

- Can express the knowledge and insights offered in this course in writing and orally.
- Can communicate effectively about the gained knowledge and the results of the assignments.

Skills

The student has the skills to use the newly acquired knowledge:

- To identify the opportunities, threats, strengths and weaknesses for value creation by entrepreneurial healthcare professionals.
- To develop a well-argued advice for value creation for patients.

The student has the skills:

- To work in a study team and to contribute to effective teamwork, while also taking responsibility for one's own actions and learning.

Aanbevolen literatuur

The literature and the 'other resources' (e.g. websites providing information and data that are found by students and teachers) are two of three knowledge repositories to be used by the students and the teams. The third repository contains the e-lectures and the slides of the other lectures. Students and teams are expected to select and use the knowledge from these repositories during the course. It is up to the students and teams to determine when they should use which repositories, and which knowledge from the repositories is required for their individual assignments and project assignments. They can consult the teachers about their selection of knowledge from the repositories. The course uses chapters from the following handbook: Wilden R., Garbuio M., Angeli F., Mascia D. (2018), Healthcare Entrepreneurship. Routledge, New York, NY/ Abingdon, Oxon. In addition, for the individual assignments and for the project assignments the students should use the literature from the repositories. It is neither necessary nor useful to read introductory literature in preparation for the course.

HMS4802

Periode 1

2 sep 2019

25 okt 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [A.J.A. van Raak](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, Paper(s), PBL, Presentation(s), Training(s)

Evaluatiemethoden:

Attendance, Final paper

Trefwoorden:

Entrepreneurial healthcare professional Healthcare systems Value creation (Inter)organisational

Movement Disorders and Rehabilitation

Volledige vakbeschrijving

Knowledge transfer during this course will include classic Problem Based Learning (PBL), short lectures, project work and practicals. In addition, students will participate in interactive lectures and will participate in a House of Commons debate. Next to gathering knowledge, in this course the main focus is on logical reasoning and applying knowledge. Students are challenged to argue, discuss and interpret relevant topics in the field of rehabilitation.

During this course students write a research proposal in teams and an individual, substantiated essay with an assigned position (pro or con) in favor or against a highly relevant topic in the field of rehabilitation medicine.

The PBL cases will be centered around:

- analyze the complex relationship and discrepancy between functioning, activity, and participation in a (seemingly simple) gait-related neurological case
- analyzing association between pain and functioning and getting insight in biopsychosocial factors influencing pain and the negative consequences for the patient and society
- technology-supported training in complex upper extremity pathology: “(non-) sense of robotics and sensor technology in rehabilitation”.

Doelstellingen van dit vak

The aim of this course is threefold:

1. From a Bio-Psycho-Social perspective, in collaboration with multidisciplinary teams, students are able to critically analyze and describe complex health-related issues with negative impact on the musculoskeletal system and interpret within broader context which methodological approach is needed to quantify/measure this issue.
2. Students are able to consider, formulate and evaluate solutions for the above-mentioned impact of complex health-related issues regarding the musculoskeletal system.
3. Students will be acquainted with innovative technologies used in the domain of rehabilitation and are able to critically evaluate the usefulness of the deployment of such technologies in rehabilitation contexts.

Aanbevolen literatuur

1. Gatchel, R.J., et al., The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychol Bull*, 2007. 133(4): p. 581-624. 2. Heerkens Y, Hirs W, de Kleijn-de Vrankrijker M, Ravenberg D, TenNapel H. Nederlandse vertaling van de International Classification of Functioning, Disability and Health (ICF): Compilatie. Houten, Bohn Stafleu Van Loghum, 2002. 3. Lemmens RJM, Timmermans AAA, Janssen-Potten YJM, Smeets RJEM, Seelen HAM. Valid and reliable instruments for arm-hand assessment at ICF activity level in persons with hemiplegia: a systematic review. *BMC Neurology* 2012,12:21. 4. Main CJ and Spanswick CC (2000). *Pain Management: An Interdisciplinary Approach* 5. Perry J, Burnfield J. (2010) *Gait analysis: normal and pathological function*. Second edition. Thorofare, Slack.

Master Human Movement Sciences

HMS4504

Periode 2

28 okt 2019

20 dec 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- E.A.A. Rameckers

Onderwijsmethode:

Assignment(s), Work in subgroups, Lecture(s), Patient contact, Paper(s), PBL, Research, Skills, Working visit(s)

Evaluatiemethoden:

Assignment, Attendance, Final paper

Fac. Health, Medicine and Life Sciences

Pharmacology for Physiotherapists

Volledige vakbeschrijving

This pharmacology course for physiotherapists aims at enabling students to gain knowledge on drug use and molecular drug actions that are necessary for optimal consultation and treatment of patients taking (self)-medication to cure, alleviate, or prevent complaints related to their medical problem. The course will focus on (self)-medications that are most-frequently observed in physiotherapy practice and may have important consequences for diagnosis and treatment by the physiotherapist. Special attention is paid to problems reported by elderly persons. Currently the Netherlands has 3 million inhabitants above the age of 65. About 1/3 of this group presents with multi-morbidity and is treated with 5 drugs or more. Due to increasing numbers of elderly patients, polypharmacy is rising. Consequently the risk of adverse drug-drug interactions and negative effects on the well-being of the ageing population increases too. The physiotherapist might be treating patients from this group to alleviate various pulmonary, musculo-skeletal or cardio-metabolic problems or might be giving advice to prevent such problems. In these settings it is mandatory to understand how drug-actions can interfere with the intended treatment outcomes. At the end of the course, the student should have the following competences in the following domains (see learning goals).

Doelstellingen van dit vak

Knowledge and understanding of:

1. Basic pharmacological principles related to pharmacodynamics (what does the drug do to the body) and pharmacokinetics (what does the body do to the drug).
2. The actions of major drug classes prescribed by medical professionals to patients who visit the physiotherapist.
3. The actions or consequences of nutritional ingredients, self-medication or over the counter medicines that are frequently taken by patients who visit the physiotherapist.
4. Drug-drug or drug-food interactions with major consequences

Applying knowledge and understandingThe student is able to:

1. Recognize and interpret physical symptoms or behaviour of patients that can be a consequence of drug actions (both negative and positive)
2. Reason how (self)medication may positively or negative influence treatment interventions installed by the physiotherapist
3. Make optimal use of digital sources or databases that are set up to provide professionals as well as patients with relevant information on drug actions and drug interactions.

Making judgmentsThe student is able to:

1. Identify serious (side)-effects of drug treatment that need direct and additional consultation by a medical professional ('red flags')
2. Critically assess the validity and utility of drug information that is presented by patients, medical doctors, industry or public sources.

CommunicationThe student is able to:

1. Inform patients on how (self)medication may positively or negative influence treatment interventions provided by the physiotherapist
2. Adequately inform medical specialists on potential 'red flags' related to (self)medication

Learning skills The student has the skills to:

1. Keep up with new developments in pharmacotherapy related to physiotherapeutic problems
2. Engage in multidisciplinary discussions on (drug) treatment optimisation

HMS4803

Periode 2

28 okt 2019

20 dec 2019

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [B.J.A. Janssen](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, Paper(s), Presentation(s)

Evaluatiemethoden:

Assignment, Final paper, Participation, Presentation, Written exam

Fac. Health, Medicine and Life Sciences

Designing Intervention Research

Volledige vakbeschrijving

(including healthy aging, prevention, etc).general health promotion and/or (diabetes, obesity, CVD, but also cancer, COPD, RA, etc) chronic metabolic disorders , rehabilitation, sport and exercise

sciences in an appropriate population. Such an intervention can be both acute (i.e. studying mechanisms and/or potential strategies for more long-term application), short-term, or long-term (i.e. studying both mechanisms and actual outcome). The research hypotheses set in these grant applications are to be integrated in the field of intervention to allow biological adaptation and improved functional capacity to an exercise stimulus will be addressed from the athletes' perspective towards the clinical patient. Students will write a research grant application in which they will describe a self-designed (exercise and/or nutritional) intervention to improve health and/or (sports)performance in various populations. The permissive role of nutritional interventions to define the most effective interventions programs to be effective it is essential to set well-defined goals specific for each target population. In this course we will integrate the different aspects of exercise and nutritional intervention need to be designed on a scientific basis to improve health and/or functional performance. For such interventionsThe important aspects of physical activity as a means to promote mental and physical well-being have been well described in the Bachelor "Movement Sciences". In our Western society the development of chronic metabolic diseases, like obesity and type 2 diabetes, is reaching epidemic proportions. Though part of this epidemic can be ascribed to the aging of the population, an alarming increase in the incidence of chronic metabolic disorders (particularly type 2 diabetes) has been reported among children and adolescents. The current epidemic is clearly associated with our sedentary lifestyle combined with an excessive energy intake. Therefore, combined exercise and nutritional

Doelstellingen van dit vak

Students who have successfully finished this course will be able to:

1. design effective physical activity and/or nutritional interventions on a scientific basis
2. integrate the knowledge concerning the functional and/or biological adaptation to exercise - and nutrition
3. select the most appropriate intervention for the desired effect: from athlete to patient
4. select the appropriate research proposal to test the efficacy of specific nutrition and/or - research to large scale population studies in vivo exercise interventions: from invasive
5. define the relevant outcome parameters
6. write, present and defend a research grant proposal within this field of research

Aanbevolen literatuur

- Guyton & Hall: Textbook of medical physiology. 10th ed. Saunders co. 2000, ISBN 0-8089-2187-8 - Maughan, Gleeson & Greenhaff; Biochemistry of exercise and training; Oxford university press, ISBN 0-19 262741-4 - McArdle WD, Katch FI, Katch VL: Exercise physiology, 5th ed. Lippincott Williams & Wilkins, 2001, ISBN 0-7817-2544-5 - McGinnis, P.M. Biomechanics of sport and exercise. Champaign, Ill, Human Kinetic Publishers, 1999 - Wasserman K. Principles of exercise testing and interpretation. Philadelphia: Lea & Febiger, 1994 - Passmore R, Eastwood MA. Davidson and Passmore, human nutrition and dietetics. Edinburgh: Churchill Livingstone, 1986 - Ellenberg M, Rifkin H and Porte D. Ellenberg & Rifkin's diabetes mellitus, 5th edition, Stamford: Appleton & Lange, 1997. - Shils ME, Young VR, Olson JA, Shike M. Modern nutrition in health and disease. Philadelphia: Lea and Febiger, 1994. - Ziegler EE, Flier LJ (eds). Present knowledge in nutrition. Washington: ILSI press/International Life Sciences Institute, 1996.

HMS4001
Periode 3
6 jan 2020

31 jan 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

6.0

Taal van de opleiding:

Engels

Coördinator:

- [T. Snijders](#)

Onderwijsmethode:

Assignment(s), Lecture(s), Work in subgroups, Paper(s), PBL, Presentation(s)

Evaluatiemethoden:

Assignment, Final paper, Participation, Portfolio, Presentation

Trefwoorden:

Intervention research Exercise intervention Methodology Presentation Research proposal

Fac. Health, Medicine and Life Sciences

Clinical Placement

Volledige vakbeschrijving

In the third clinical rotations period of 8 weeks (two 10 weeks periods have been already fulfilled in the bachelor curriculum) students will be placed in more complex environments in which physiotherapeutic health care is delivered e.g., the rehabilitation center, the hospital setting, a stroke center.

Students are also permitted to take this clinical rotations period abroad, or combine it with their master thesis, in which case a 20 weeks part-time internship is possible.

A clinical rotations coordinator will assign students to and monitor their progress at the various institutions.

The clinical rotation period is structured in the same way as in the bachelor and builds a student portfolio

Doelstellingen van dit vak

- Acts and thinks with a strong awareness of the concept of a physiotherapy professional at a basic academic and clinical level
- Is conversant with the terms and theories and key concepts of the underlying basic disciplines and is able to communicate this to other stakeholders
- Is conversant with current health care and practice problems, questions and challenges in the field of physiotherapy (profession), and is able to interpret and explain and act on these problems in both theoretical -academic as well as in clinical or professional setting with awareness of responsibility to society
- Has organizing clinical thinking, and reasoning skills at the Bachelors/ level demonstrable in well described training situations and supervised situations during clinical rotations
- Is able to demonstrate integrated academic competencies (science in practice) and clinical competencies including critical appraisal and EBP at a bachelor of science level
- Has broad knowledge and skills in the physiotherapy sciences and is able to comply with current and future clinical guidelines and professional standards at bachelor of science level and communicate this to stakeholders towards own functioning as well as to society H. Has

Master Human Movement Sciences

developed a lifelong learning, organizing and critical thinking attitude and skills and acts accordingly with respect and responsibility

- Is able to adequately communicate in both written and spoken language to specified target groups (share knowledge, collaboration with other professionals, researchers, companies) and use this communication in collaboration with other stakeholders

HMS4804

Periode 4

3 feb 2020

3 apr 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

12.0

Taal van de opleiding:

Engels

Coördinator:

- [R.A. de Bie](#)

Onderwijsmethode:

Patientcontact, Training(s)

Evaluatiemethoden:

Observation, Portfolio

Trefwoorden:

Clinical rotation, Portfolio

Fac. Health, Medicine and Life Sciences

Placements and Thesis

Volledige vakbeschrijving

The aim of the thesis project is to provide students with experience in subsequent aspects of scientific research. The students select a research project themselves. This project can be carried out at departments in the university or university hospital, but also at other national or international universities or (research) institutes, or research-driven (sports or healthcare) organisations. The opportunity to go abroad for their placement provides students with a great way of gaining international experience, broadening their academic as well as their 'life' perspectives, and (based on experiences from many previous students) helps them prepare for an international career. For the specialty physiotherapy a combination with their clinical rotation is possible - especially when they want to go abroad, since this gives them the opportunity to work for 20 weeks (30 ECTs) in one place.

The experimental work for the placement is generally done on an individual basis (under supervision), but can also be accomplished in 'teams' of maximum 2 students; however the final thesis, which will be the report of this study, will have to be an individual product. To allow proper and timely preparation for the research project, students will select a research topic and supervisor during the first period of the master year.

In close consultancy with their supervisor, students write and agree upon a research proposal, select adequate methods to perform the experiments and chose appropriate techniques for analysing the data, including statistical analyses. The thesis will have the layout of a scientific paper from a

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specific Journal (to be determined with the supervisor).

Specific guidelines for the research and thesis placement are also found in the separate document "Information on placement and guidelines for thesis" that accounts for all Health Master programs.

Doelstellingen van dit vak

Students who have successfully finished this part of the master program are able to:

- Derive hypotheses for a study from current knowledge
- Design and perform a research project
- Analyse and interpret results of an experiment
- Present results in an organized and structured way
- Discuss the data and relate results and conclusions to initial hypotheses
- Write a scientific paper

HMS4805

Jaar

1 sep 2019

31 aug 2020

[Vakbeschrijving afdrukken](#)

Studiepunten:

18.0

Taal van de opleiding:

Engels

Coördinator:

- [R.A. de Bie](#)

Onderwijsmethode:

Paper(s), Research

Evaluatiemethoden:

Final paper

Trefwoorden:

Master thesis