

# Master Musculoskeletal Physiotherapy Sciences VU Amsterdam

*Report of the limited programme assessment  
January 22<sup>nd</sup> and 23<sup>rd</sup> 2019*

## Colophon

VU Amsterdam  
De Boelelaan 1105  
1081 HV Amsterdam

Programme: Master Musculoskeletal Physiotherapy Sciences  
Location: Amsterdam  
Mode of study: Full-time  
Croho-registration: 69317

### **Assessment committee**

Raoul van Aalst, chair  
Nicole Wenderoth, domain expert  
Gertjan Ettema, domain expert  
Anton Wagenmakers, domain expert  
Vera Broek, student member  
Titia Buising, secretary

The committee was presented to the NVAO for approval.

The assessment was conducted under the responsibility of  
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## Summary

On January 22nd and 23rd 2019 an AeQui committee performed an assessment of the master programme in Musculoskeletal Physiotherapy Sciences of Vrije Universiteit Amsterdam (VU Amsterdam). The overall judgement of the committee is that the quality of the programme is **satisfactory**.

### Intended learning outcomes

The committee assesses the intended learning outcomes as **satisfactory**. The committee concludes that the intended learning outcomes have been adequately concretised with regard to content, level and orientation and meet international requirements. The intended learning outcomes reflect the Dublin descriptors and tie in with the domain-specific framework of reference. The programme has an explicit focus on translating academic knowledge to clinical practice in physiotherapy. The focus of the programme ties in with a demand in the professional field for academically trained professionals that can enhance the field of physiotherapeutic care. The committee appreciates the role of the advisory board.

### Teaching-learning environment

The assessment committee assesses the orientation of the programme as **satisfactory**. The committee concludes that the programme enables students to realise the intended learning outcomes. The programme is quite new, since the current curriculum started in this academic year (2018/2019). The structure of mandatory and elective courses ensures that students develop relevant academic skills. The programmes focus on translational research is reflected in the different courses. The committee suggests including more insight into the rules and regulations of medical research in the programme and examining whether ethical aspects are sufficiently addressed. The programme uses interactive and small-scale teaching methods. However small, the staff involved is very competent, enthusiastic and approachable. The team of lecturers meets on a regular basis to discuss the con-

tent of the programme. Lecturers have ample contacts in the field of physiotherapeutic care, inside and outside academia. The committee notes that the workload of lecturers needs continuous monitoring. The committee concludes that the programme applies the legal enrolment criteria. The programme analyses the effectiveness of intake requirements in order to attract the right students for the programme.

### Assessment

The assessment committee concludes that the programme has an adequate system of assessment in place, and assesses this standard as **good**. The committee concludes that the programme has an effective assessment system in place. The intended learning outcomes are at the basis of this system. Effective measures are taken to guarantee the validity, reliability and transparency of the assessments, by using an assessment programme, the four-eyes principle and random reviews of assessments and theses by the examinations board. The level of the different assessments studied by the committee during the site visit was high; in addition, the committee appreciates the variety in assessment methods used. The examinations board and its sub-committees are effectively organised and safeguard the quality of the assessments. The committee especially appreciates the varied ways in which the board checks the quality of assessments and theses.

### Achieved learning outcomes

The committee assesses this standard as **satisfactory**. Based on the studied documents and the interviews, the committee concludes that

graduates of the master programme MPS achieve the required level and the intended learning outcomes. This was confirmed in the meeting with students and alumni; they are capable of creating their own career path within physiotherapeutic care. The committee concludes that the overall quality of the studied theses is adequate and agrees with the grades given. The committee also notes that research questions and methodology are clearly geared

towards the clinical domain and are distinguishable from the master programme in HMS.

#### **Recommendations**

The committee recommends including more insight into the rules and regulations of medical research in the programme. In addition, the committee suggests the programme to examine whether ethical aspects are sufficiently addressed.

All standards of the NVAO assessment framework are positively assessed; hence the committee awards a positive recommendation for the accreditation of the master programme in Musculoskeletal Physiotherapy Sciences of VU Amsterdam. The committee concludes that the overall assessment of the programme is **satisfactory**.

On behalf of the entire assessment committee,  
Utrecht, April 2019,

Raoul van Aalst  
Chair

Titia Busing  
Secretary

## Introduction

The master programme in Musculoskeletal Physiotherapy Sciences aims to educate academics with a clinical background to translate scientific knowledge into meaningful and clinically relevant diagnostics and interventions. The programme builds upon clinical knowledge in the field of musculoskeletal disorders.

### The institute

The master programme in Musculoskeletal Physiotherapy Sciences is part of the Faculty of Behavioural and Movement Sciences of VU Amsterdam. The faculty is the result of a merger between the Faculty of Psychology & Educational and Family Studies and the Faculty of Human Movement Sciences in 2015. The faculty provides bachelor's and (research) master's programmes for approximately 3500 students.

Besides the programme Musculoskeletal Physiotherapy Sciences, the cluster of Human Movement Sciences also contains the bachelor programme in Human Movement Sciences, the research master in Human Movement Sciences and the master programme in Human Movement Sciences. The lecturers of the four programmes are appointed by the department of Human Movement Sciences.

Each programme offered has a programme director. The programme director is primarily responsible for the development of the mission and vision of the programme, their translation into the programme's content, and for guarding that the courses and their assessments contribute to the end qualifications. The programme director is in close contact with the appointed course coordinators and the programme committee.

### The programme

The English taught master programme in Musculoskeletal Physiotherapy Sciences (MPS) comprises 60 EC.

The programme was originally designed for students with a background in human movement

sciences as well as for students with a (para)medical background. Due to the latter group not entering the programme and the unclear distinction between the programme and the Rehabilitation track of the master programme in HMS, the entry requirements of the programme and the orientation of the programme have changed. Currently, the programme is solely intended for students with a (para)medical background. In contrary to the other programmes in HMS offered by the cluster HMS, this programme is not so much focused on the methodology used to answer basic scientific questions, but rather on the use and translation of methodologies and measuring techniques that are most relevant to answer clinically oriented research questions. The programme emphasises the translational component between science and practice (i.e. clinical reasoning). The curriculum was adapted to this change in focus and the new curriculum was implemented in the current academic year (2018 – 2019).

The first semester consists of mandatory courses focusing on topics related to translational research, research measurement and research methodology, pathophysiology of pain, and exercise physiology. In the second semester, students can choose electives, which give them the opportunity to follow their own interest. The programme is completed with the master research project.

The programme started in 2015. Because the programme is part of the visitation cluster of Human Movement Sciences, the re-accreditation is scheduled three years earlier than originally planned.

### Cluster visitation

Since the committee visited all human movement sciences programmes, it was able to see similarities and differences between these programmes. All universities involved have their own specific focus. Learning at Maastricht University is characterized by the problem-based learning concept. Human Movement Sciences at Maastricht University is offered at masters level, with specialisations in Health & Rehabilitation, Sports & Nutrition and Physiotherapy. Particularly, the strong expertise in nutrition, exercise physiology and the Physiotherapy specialisation are quite unique.

At VU Amsterdam, human movement sciences is offered at bachelor's and master's level. There is a strong focus and staff expertise on biomechanics, modelling, movement analysis and sports. The university also offers the only research master in human movement sciences in the Netherlands.

University of Groningen also offers human movement sciences at bachelor and master level. The bachelor programme has a strong focus on neuroscience and statistics. The master's programme Human Movement Sciences is a two-year programme. The programmes have a close relation with the departments in rehabilitation and orthopaedics of UMCG.

Even though all three universities offer a programme or specialisation in sports, the focus is different. Maastricht University addresses sports and nutrition. The VU focuses on sport psychology, biophysics in sports and high-performance coaching. In relation to elite sport, the programme is connected to cyclic sports. The master's programme in Sport Sciences in Groningen has a broad focus within this specific field, ranging from sport and cognition in children to performance analysis and optimisation in sport. Within top sport, the programme is more connected to (Olympic) team sports.

In general, the committee recommends all programmes to stay in touch with new technologies

and developments, such as big data, machine learning and cutting-edge molecular analyses of human blood and tissue samples.

### The assessment

VU University assigned AeQui VBI to perform a quality assessment. In close co-operation with AeQui, and the other programmes part of this cluster, an independent and competent assessment committee was convened. A preparatory meeting with representatives from the programme has taken place.

The quality assessment involved all universities (except from Nijmegen) and programmes that are part of the Human Movement Sciences cluster in the Netherlands. The site visits were held between January 21<sup>st</sup> and 25<sup>th</sup>. The site visit at VU University took place at January 22<sup>nd</sup> and 23<sup>rd</sup>, in accordance with the programme in attachment 2. The committee explicitly oriented itself on the cluster of which the programmes are part. This took place during the preparatory meetings for each site visit and the last committee meeting in which the final assessment took place. For the assessment of the master's programme Human Movement Sciences of Maastricht University and more specific the Physiotherapy specialisation, Bart Staal was part of the committee. The other committee members participated in all assessments part of this cluster.

The committee assessed all programmes in an independent manner. At the conclusion of the assessment, the results were presented to representatives of the programme. The draft version of this report was sent to the programme representatives; their reactions have led to this final version of the report.

Initiated by the programme, a developmental meeting will take place in October 2019. The results of this meeting will not influence the assessment written down in this report.

## 1. Intended learning outcomes

The committee concludes that the intended learning outcomes have been adequately concretised with regard to content, level and orientation and meet international requirements. The intended learning outcomes reflect the Dublin descriptors and tie in with the domain-specific framework of reference. The programme has an explicit focus on translating academic knowledge to clinical practice in physiotherapy. The focus of the programme ties in with a demand in the professional field for academically trained professionals that can enhance the field of physiotherapeutic care. The committee appreciates the role of the advisory board.

### *Findings*

Musculoskeletal Physiotherapy Sciences is concerned with the body of knowledge, essential for systematic and scientific study of human movement, but with a strong focus on musculoskeletal disorders. The programme aims for students to become scientist practitioners in the field of physiotherapy. Therefore, the programme builds on clinical knowledge and skills that the students obtained during previous education and focuses on the translation of acquired academic knowledge to clinical practice.

The programme has an explicit academic orientation: students learn to formulate (clinically) relevant research questions. To answer these questions, students have to combine existing, evidence-based knowledge and, if necessary, supplement it with new knowledge obtained through clinical experimental research. The ability to creatively and critically handle knowledge, concepts and methods is key. The use of methods and techniques that are closely linked to the daily physiotherapy practice plays an important role. When research methods in a laboratory setting are used, the translation of the acquired knowledge to clinical practice is essential.

The programme ties in with the need, expressed by the Dutch Health Council, for research into the development and evaluation of measurement tools and to assess and unravel the effects of musculoskeletal physiotherapy. Therefore, graduates of the programme are expected to understand and conduct the full empirical scientific research cycle (defining a research question,

designing a study, collecting data, analysing data and reporting results) and to translate research results into professional practice.

The programme expects graduates to be working as a researcher in (academic) hospitals or rehabilitation centres, in companies that focus on the development of instruments used in physiotherapeutic research or as policy maker in the field of health care. Besides, the programme expects that graduates will remain working in the intra- or extramural practice and contribute to raising the level of the physiotherapeutic care.

Since the programme is very specific, the domain-specific framework of reference was drawn up by the programme. It provides an overview of current research topics, the demands from the professional field and the positioning of the programme. On an international level, comparable programmes focus on epidemiological research, rather than clinical experimental research.

An advisory board provides a critical external perspective on the programmes of the department and their future, and supports and advises the Programme Directors on current and future activities. The Advisory Board consists of senior academics and representatives from the field of work.

### *Considerations*

Based on the interviews and the examination of underlying documentation, the committee concludes that the intended learning outcomes tie



in with (inter)national requirements for this field. The intended learning outcomes are described by using the Dublin descriptors.

The committee concludes that the programme has an explicit and singular focus on clinical experimental research within the field of physiotherapy. There are no comparable programme's in the Netherlands or abroad.

Based on an overview of the relation between courses and intended learning outcomes (as

provided in the assessment programme) and the course descriptions, the committee notes that all intended learning outcomes are covered.

The committee appreciates the role of the advisory board. This contributes to the relevance and topicality of the programme.

Based on the above, the committee assesses this standard as **satisfactory**.

## 2. Teaching-learning environment

The committee concludes that the programme enables students to realise the intended learning outcomes. The programme is quite new, since the current curriculum started in this academic year (2018/2019). The structure of mandatory and elective courses ensures that students develop relevant academic skills. The programmes focus on translational research is reflected in the different courses. The committee suggests including more insight into the rules and regulations of medical research in the programme and examining whether ethical aspects are sufficiently addressed. The programme uses interactive and small-scale teaching methods. However small, the staff involved is very competent, enthusiastic and approachable. The team of lecturers meets on a regular basis to discuss the content of the programme. Lecturers have ample contacts in the field of physiotherapeutic care, inside and outside academia. The committee notes that the workload of lecturers needs continuous monitoring. The committee concludes that the programme applies the legal enrolment criteria. The programme analyses the effectiveness of intake requirements in order to attract the right students for the programme.

### *Findings*

#### **Programme**

The programme comprises of mandatory (30 EC) and elective courses (6 EC) and the master research project (24 EC). The programme is structured in semesters and periods of eight or four weeks.

The programme uses the principles of constructive alignment to ensure the coherence between the learning objectives of the courses, the content of the courses and the assessment methods used.

The first semester includes courses on clinical experimental research related to current topics like pathophysiology of pain, pain management, arthritis, aging, low back pain and exercise physiology. In addition, basic principles of data acquisition and data processing in measuring human movement are trained, supported by advanced knowledge on research design, statistics and appraisal. In the Translational Research course at the end of the first semester, students apply the learned knowledge of a translational model in the physiotherapy domain, specifically on cost effectiveness, utilization, guidelines and implementation research.

The Clinical Exercise Physiology course, which is also attended by students from the master pro-

gramme in Human Movement Sciences, provides students with the fundamental knowledge of clinical exercise physiology, which will enable them to apply this knowledge in preventive and rehabilitative exercise programmes.

The electives in the second semester include a practical internship, a short literature review, the 'Docentenopleiding' course and courses on entrepreneurship, electromyography, imaging, sport and performance diets and neuromechanics. The 'Docentenopleiding' course extends students study time with at least a half year. This course leads to a qualification to teach at higher education level.

Overall, students and alumni are satisfied with their programme, the committee learned during the site visit. They value the multidisciplinary character of the programme, the focus on translational research and how their research skills add to strengthening the daily practice of physiotherapy. Students remarked that some insight into rules and regulations of medical research would be beneficial.

#### **Educational concept**

The programme aims for personal engagement, openness and responsibility, the core values of the university's vision for education. The programme provides an informal setting with ample

contact between student and lecturers. Students are required to take personal responsibility for their own learning process and to demonstrate self-discipline. Discussions are open and inclusive.

Teaching methods used include lectures, work groups, practicals, self-study and lab sessions. Students value the small-scale of the programme and the opportunities for presentations and in-depth discussions during the lectures.

### **Intake**

The legal enrolment criteria are applicable to the programme. As mentioned before, the enrolment criteria have changed and the programme now explicitly aims for candidates with a bachelor degree in the field of physiotherapy, occupational or exercise therapy or medicine, and comparable studies with clinical experience. In addition, candidates' proficiency in English and knowledge on basic mathematics and basic academic skills are expected at the start of the programme. Regarding the latter, candidates perform a GMAT assessment in case they lack evidence of basic academic skills (e.g. a bachelor degree at university level) is also accepted. Up till now a minimal score on the GMAT test is used as an advice and not as an intake requirement. Approximately 25% of the students has an international background.

Lecturers remarked during the site visit that currently the relation between student's GMAT score and the scores for assessments is analysed and that possible general deficiencies are being determined. Based on this analysis, the introduction of matching interviews with candidates and requiring a minimal score for the GMAT assessment to enter the programme will be discussed.

### **Staff**

The programme is offered by the HMS department. Lecturers involved also teach in the other programmes of the department. The core team consists of four assistant and associate profes-

sors and an external lecturer with a background in physiotherapy or with affinity for physiotherapy related research. In addition, most lecturers of the mandatory courses have a background in physiotherapy, are involved in related organisations and / or work part-time in clinical practice. Lecturers are also involved in the interfaculty Amsterdam Movement Sciences research institute. All lecturers of the core team have a BKO (teaching qualification), one also has a senior teaching qualification. The electives are offered by lecturers from the other HMS programmes of HMS department.

Staff meet once each semester with the programme director to reflect on the content, quality and consistency of the programme. In addition, the programme director regularly and informally meets with individual staff members.

Students and alumni value the knowledge and approachability of their lecturers.

### **Facilities**

The department offers different (new) laboratories, software and equipment for students and staff. Canvas is used as a digital learning platform.

Students are primarily guided by their lecturers and research project supervisor. The study advisor, with a background in human movement sciences, is also available for students.

During a career day, alumni are invited to inform students about their potential career path, and to establish links with the professional field.

During the site visit, the committee also met representatives from the programme committee. The programme committee meets on a regular bases, and the programme director is present as hearer. Positive evaluations and points for improvement are discussed with lecturers. The goal is to implement improvements in the ongoing academic year.

### *Considerations*

The committee concludes that the teaching-learning environment and the staff involved enable students to achieve the intended learning outcomes. The programme is quite new, since the present curriculum started in this academic year (2018/2019). The programme has a coherent structure of mandatory and elective courses that ensure that students develop relevant academic skills. The programme's focus on translational research is reflected in the different courses. The relation between research and daily practice in physiotherapeutic care is constantly addressed. Students also value this, the committee learned during the site visit.

The committee supports the remark made by students to include more insight into the rules and regulations of medical research in the programme. In addition, the committee suggests the programme to examine whether ethical aspects are sufficiently addressed.

The committee appreciates the interactive and small-scale teaching methods used in the programme. Based on the studied documents, the committee concludes that relevant and up-to-

date literature and articles are used in the programme.

The committee notes that the legal enrolment criteria are applicable to the programme. The committee appreciates that the programme analyses the effectiveness of intake requirements in order to attract the right students for the programme.

During the site visit, the committee met very competent and enthusiastic staff members. Even though the core team involved is quite small, lecturers are very engaged with students and the programme. The committee values that the lecturers involved have a broad experience with clinical practice.

The committee also concludes that the department is quite coherent and that lecturers meet on a regular basis to discuss the content of the programme and the relation between courses. Lecturers have ample contacts inside and outside academia, and put these to good use for their students. The committee notes however that the workload of lecturers needs continuous monitoring.

Based on the above, the committee assesses this standard as **satisfactory**.

### 3. Assessment

The committee concludes that the programme has an effective assessment system in place. The intended learning outcomes are at the basis of this system. Effective measures are taken to guarantee the validity, reliability and transparency of the assessments, by using an assessment programme, the four-eyes principle and random reviews of assessments and theses by the examinations board. The level of the different assessments studied by the committee during the site visit was high; in addition, the committee appreciates the variety in assessment methods used. The examinations board and its sub-committees are effectively organised and safeguard the quality of the assessments. The committee especially appreciates the varied ways in which the board checks the quality of assessments and theses.

#### *Findings*

The programme ties in with the faculty's and university's assessment policy. Based on these policies an assessment programme is drawn up by the programme director. The assessment programme provides an overview of the relation between intended learning outcomes, learning objectives of the courses and assessment types. The programme director is responsible for the assessment processes. The examiner is responsible for the quality of the assessment.

Assessments are developed by examiners appointed for each course. Assessments need to show a clear relation to the learning objectives of the course and the didactic activities. Assessment matrices are used to relate the course objectives to the content of and assessment. The faculty aims for a bottom up implementation of the use of assessment matrices; the use of this is not mandatory.

Peer review is obligatory in construction assessments. In practice this means that a colleague evaluates the assessment, the accompanying answer model and the level of difficulty, before the exam is given. This is usually discussed in a meeting with the examiner involved. From the next academic year, the names of the examiner and the peer have to be mentioned on the front page of the exam.

Assessment methods used include practical assignments, written exams (with open end ques-

tions or multiple-choice questions), poster presentation, development of an instruction video, oral presentation, practical examination and a written essay. In some courses, mid-term practicals or assignments are used to motivate students to study actively. In most courses multiple methods of assessment are used.

Students are informed about the assessments in the study guide, course manuals and during the courses. In addition, representative example questions are available for students. The students the committee met during the site visit are in general satisfied with the level of challenge and difficulty of the assessments. Students remarked that some of the assessments could focus more on applying rather than on reproducing knowledge. Students value the feedback from their lecturers.

#### **Examinations board**

The faculty examinations board includes three sub-committees for the clusters Psychology, Education & Family Studies and Human Movement Sciences. The board consists of an independent chair, the three chairs of the sub-committees, an examinations expert and an external legal expert. The sub-committees consist of at least one staff member for each represented programme.

The examinations board is responsible for ensuring the quality, organisation and coordination of

the assessments. The board investigates independently and systematically whether the assessment quality meets the criteria as defined in the faculty's assessment policy. For this, the sub-committee uses the student evaluations regarding assessment, pass rates, and the evaluation and item analysis of multiple-choice exams. The board is also responsible for determining whether students meet the end qualifications of the programme and checks the quality of the master research project and assessments by an annual sample.

The meeting with representatives of the sub-committee HMS and the examinations board during the site visit revealed that the examinations board meets with student representatives twice per year. These meetings are held to receive additional feedback that is not part of the regular evaluations. In addition, assessment results, evaluations and statistical analyses are used for monitoring the quality of the assessments. The sub-committee checks the grades of both assessors of the research projects (theses) on coherence, reliability, average differences, standard deviation and limit of agreement. It was also made clear that lecturers are free to decide on how they provide their students with feedback on their research project (thesis). This can be done orally or by using the assessment form. The examinations board ensures that assessors involved in the assessment of research projects (theses) work together in different compositions, to avoid permanent combinations of assessors. The board is currently working on the implementation of digital assessments and digitized assessment matrices.

### *Considerations*

The committee concludes that an effective system of assessment is in place. The quality assurance of the assessment system is very solid, proactive and effective measures are taken to guarantee the validity, reliability and transparency of the assessments. The assessment plan, assessment programme, four-eye principle, the systematic checks by examinations board all add to this. The committee appreciates that the full scale of grades is used by the examiners and students can obtain a 10.

Students are content with the level of and variation in assessments. In general, the level of the different assessments studied by the committee during the site visit was high. The committee also values the variation in assessment methods used. The committee encourages the programme to keep promoting the use of assessment matrices; this can contribute to the overall quality of the assessments and can ensure that more assessments address the application of knowledge.

The examinations board and its sub-committees are very well organised and safeguard the quality of the assessments in a structured and accurate manner. The committee appreciates the variety of analyses the board uses in evaluating the quality of assessments and theses.

Based on the above, the committee assesses this standard as **good**.

## 4. Achieved learning outcomes

Based on the studied documents and the interviews, the committee concludes that graduates of the master programme MPS achieve the required level and the intended learning outcomes. This was confirmed in the meeting with students and alumni; they are capable of creating their own career path within physiotherapeutic care. The committee concludes that the overall quality of the studied theses is adequate and agrees with the grades given. The committee also notes that research questions and methodology are clearly geared towards the clinical domain and are distinguishable from the master programme in HMS.

### *Findings*

The programme is completed with the master research project (24 EC). With this project, students show that, under supervision, they can devise an experimental setup and collect, analyse and interpret and report their own empirical data, and present their work to fellow students and staff members of the programme.

Students are responsible for finding a suitable research project and a supervisor. To support students in this, a list of research project opportunities is available and students can contact their lecturers about possible projects. Student and supervisor are expected to sign a contract at the start of the project. In the contract, student and supervisor agree on the research topic, specific dates for deadlines, the use of equipment, data transfer, authorship and disputes.

After determining the subject and supervisor, students prepare a research proposal. The proposal states the approach and theoretical framework within which the project is defined. In addition, it contains the research hypotheses, the experiments and statistical analyses used to test the hypotheses, a time plan and an overview of the equipment needed.

Two examiners are involved in the assessment of the research project. The research process is assessed by the daily supervisor (first examiner). This grade contributes 30% to the final grade. Both first and (independent) second examiner grade the research paper, by means of an assessment form (60% of the final grade). When

the grade of both examiners differs more than one point, the examiners meet and try to reach consensus. If this is not reached, a third examiner is appointed to determine the final grade. Besides, both examiners assess the student's oral presentation (10% of the final grade).

The programme stays in contact with alumni through LinkedIn and Facebook. Alumni are invited as guest lecturers and for the annual career day. Since the programme is quite new, there are only a small number of alumni. Alumni have found positions as PhD student on clinical topics or as physiotherapist-researchers in medical centres.

During the site visit, the committee discussed with lecturers the possibilities for clinical research in the Netherlands for international students. It became clear that, because of language issues, international students usually team up with a Dutch student for collecting data. The Dutch student provides patients involved with the relevant information and both students engage in measuring and data collection. A supervisor is also available for support. With the gathered data, both students work on their own research question.

The students and alumni the committee met, had a clear view on their future career opportunities.

### *Considerations*

The committee concludes that the programme has an adequate graduation procedure in place.

The committee reviewed fifteen theses of the programme. These theses were realised in the 'old' programme; the current programme was implemented this academic year and theses are not yet available. The committee concludes that the overall quality of the studied theses is adequate and graduates of the MPS programme achieve the required level. In general, the committee agreed with the grades given. The committee also notes that the thesis topics reflected the difference between the MPS programme and the master in Human Movement Sciences well. Research questions and methodology are clearly geared towards the clinical domain. At the same time, research quality of the theses is adequate and does not differ from the standards of the HMS master's programme.

The committee expects that with the renewed focus of the programme, in the future, the theses will even more reflect clinical experimental research and be even more distinguishable from theses from the master programme in HMS.

The meeting with students and alumni during the site visit confirmed the adequate level of the thesis / the programme. The students and alumni the panel met have a clear view on their future and are capable of creating their own career path within the field of physiotherapy, human movement sciences or education.

Based on the above, the committee assesses this standard as **satisfactory**.



## Appendices

## Appendix 1 Assessment committee

Naam panellid (incl. tituluur)	Korte functiebeschrijving van de panelleden (1-3 zinnen)
prof. dr. Gertjan Ettema	Gertjan Ettema is sinds 1998 professor aan de NTNU, Department of Neuromedicine and Movement Science, Faculty of Medicine and Health Sciences, NTNU, Trondheim. Zijn onderzoeksgebieden zijn biomechanica en (neuro)fysiologie in motor behaviour (in het bijzonder sport) en computer modelling van biomechanica en spierfunctie in coördinatie. Hij doceert en is curriculumontwikkelaar op het gebied van biomechanica, motor control en coördinatie op alle niveaus. Hij is sinds 2014 wetenschappelijk manager van Centre for Elite Sports Research en sinds 2013 section editor van Human Movement Science (sinds 2010 editorial board member). Daarnaast is hij lid van de International Society of Biomechanics (ISB) en de European College of Sport Science (ECSS). In de jaren 2000 was hij professor II aan Norges Idretts Høgskole Oslo; in de jaren '90 docent aan de University of Queensland, Australië en de VU Amsterdam. In Australië heeft hij een cursus voor Problem-based-learning facilitator in the Medical Curriculum gevolgd.
prof. dr. Anton Wagenmakers	Anton Wagenmakers is sinds 2012 professor of Exercise Metabolism and Lead of Exercise Metabolism & Adaptation Research Group aan Liverpool John Moores University. Anton is voorzitter van de werkgroep curriculumontwikkeling BSc Sport and Exercise Science en moduleleider en examiner in de MSc Sport and Exercise Physiology. Daarvoor was hij 10 jaar lang als Professor of Exercise Biochemistry verbonden aan University of Birmingham, sinds 2008 als & Head of School of Sport & Exercise Sciences. In Nederland had hij van 2003-2007 een parttime leerstoel in Metabolic Control Systems, Faculty of Biomedical Engineering aan de TU/e en was hij tot 2003 verbonden aan de UM. Bij UM was hij tutor en examiner van bachelortheses en lid van voortgangstoets Beoordelingscommissie. Van 1999-2003 was hij lid van de Examencommissie BMT aan de TU/e.
prof. dr. Nicole C. Wenderoth	Nicole Wenderoth is sinds 2012 full professor Neural Control of Movement en directeur van het Institute for Human Movement Science and Sport, Department of Health Sciences and Technology, ETH Zürich, Zwitserland. Hier geeft zij leiding aan een multidisciplinaire onderzoeksgroep. Zij is lid van de ETH Onderzoekscommissie, lid van de Stuurgroep Neuroscience Centre Zürich, wetenschappelijk bestuurslid van zowel de Hochschulmedizin Zürich als van de European College of Sport Sciences. Zij treedt regelmatig

	<p>op als reviewer van internationale fondsen en van journals op het gebied van Neuroscience, Neuroimaging en Motor Control. Tot 2012 was zij verbonden aan KU Leuven als assistant professor. Zij is promotor van tot nu toe 20 afgeronde promotietrajecten en heeft meerdere wetenschappelijke prijzen in ontvangst mogen nemen, zoals in 2013 de Golden Owl for excellent teaching; in 2006 een professorship with specific research assignment (competitive position awarded for 10 years).</p>
Vera L. Broek, student-lid	<p>Vera Broek studeert Biomedische Wetenschappen aan LUMC en Klassieke Muziek aan Codarts University of the Arts. Zij is student-assistent bij microscooppractica in het LUMC en studentvertegenwoordiger in de minor Cellular Therapies in Biomedical Sciences. Zij treedt op als student-lid van visitatiepanels voor TNO's en was in 2016-2017 panellid ZonMw (Lyme Disease).</p>
drs. Raoul R. van Aalst	<p>Raoul van Aalst is bedrijfskundige van achtergrond. Na afronding daarvan is hij werkzaam geweest in zowel controllersfuncties als adviesfuncties. Sinds 2005 vervult hij de functie van controller bij Tennet. Sinds 2016 is hij programmamanager Always Energy, een gezondheids- en vitaliteitsprogramma dat erop gericht is om een gezonde levensstijl bij medewerkers te bevorderen. Hij is sinds 2004 frequent betrokken bij uitvoeren van visitaties in het hoger onderwijs, zowel in de rol van extern deskundige als in de rol van voorzitter. In oktober 2018 verwacht hij de module "Assessment in Higher Education" bij de Erasmus Universiteit Rotterdam (Risbo) af te ronden.</p>

The panel was supported by Titia Busing, secretary. All panel-members signed a declaration of independence and confidentiality, which were submitted to NVAO.

## Appendix 2 Programme site visit

### Programme site visit VU Amsterdam, Forum 3 (1st floor, main building VU)

#### Tuesday January 22

12.00 -13.00 hours:	Arrival panel
13.00 – 13.30 hours:	Management
13.30 – 14.30 hours:	Guided tour
14.45 – 15.30 hours:	Examinations Board
15.45 - 16.45 hours:	Lecturers master programme Human Movement Science
16.45 - 17.45 hours	Students and alumni master programme Human Movement Sciences

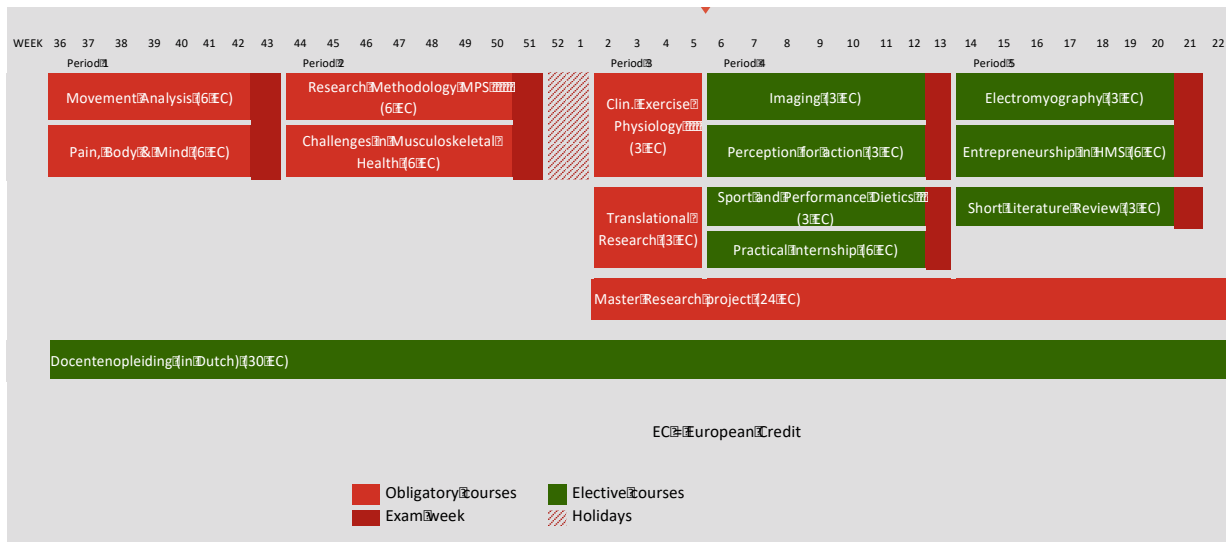
#### Wednesday January 23

9.00 - 10.00 hours:	Lecturers bachelor programme Human Movement Sciences
10.00 - 11.00 hours:	Students and alumni bachelor programme Human Movement Sciences
11.15 - 12.15 hours:	Lecturers master programme Musculoskeletal Physiotherapy Sciences
12.15 – 13.15 hours:	Students and alumni master programme Musculoskeletal Physiotherapy Sciences
13.15 – 14.00 hours:	Lunch
14.00 – 15.-00 hours:	Lecturers bachelor programme RM Human Movement Sciences
15.00 – 16.00 hours:	Students and alumni RM Human Movement Sciences
16.00 – 18.00 hours:	Internal meeting panel
18.00 – 18.15 hours:	Feedback session

## Appendix 3 Intended learning outcomes

End qualifications of the Master of Science in Musculoskeletal Physiotherapy Sciences
1. Knowledge of and insight into current research with regard to causes, prevention, diagnosis, treatment (especially physiotherapy management) and prognosis of musculoskeletal disorders
2. Knowledge of advanced research methods and techniques relevant to musculoskeletal physiotherapy research
3. The ability to apply advanced research techniques and methods used to investigate the musculoskeletal system
4. The ability to formulate (clinically) relevant research questions and to design plans, methods, procedures and analyses to answer these questions and implement the results in a clinical or community setting
5. The ability to collect, analyse and interpret scientific data concerning causes, prevention, diagnosis, treatment (especially physiotherapeutic management) and prognosis of musculoskeletal disorders
6. The ability to apply theories and models from physiotherapy, human movement and related sciences to formulate and answer clinical research questions relevant to this field of study
7. The ability to integrate information originating from several fields of research and clinical physiotherapy practice
8. The ability to think along interdisciplinary lines and to have insight in relevant disciplines involved in musculoskeletal disorders
9. The ability to critically evaluate methods and results of research
10. Insight in the scientific, clinical and social relevance of current research in the field of musculoskeletal disorders
11. The ability to reflect on social and ethical issues related to research, and to promote responsible conduct in research and academia (research integrity).
12. The ability to contribute to scientific discussions about research in the field of musculoskeletal physiotherapy
13. The ability to comprehensively present research in a professional manner to a scientific, clinical and lay audience
14. The ability to present research in writing at the level of a scientific and professional journal
15. The ability to communicate with experts from different disciplines and to build exchange and collaboration within and between disciplines
16. The ability to evaluate and reflect critically on his/her own functioning according to the guidelines of good clinical practice
17. The ability to work in an interdisciplinary (research) environment
18. The ability to largely autonomously collect scientific information and to analyse and evaluate this information critically

## Appendix 4 Overview of the programme



## Appendix 5 Studied documents

The panel studied prior to the site visit fifteen theses of graduates

The panel studied during the visit the following documents (partly in hard copy and partly digital):

- Annual report Education of the Faculty of Behavioural and Movement Sciences 2016-2017
- Annual report Examinations Board FGB 2017-2018
- Annual report master programme Musculoskeletal Physiotherapy Sciences 2017-2018
- Annual report of the Programme Committee 2017-2018
- Notes on meetings on establishment Examinations Board
- Notes on cluster meetings Human Movement Sciences
- Notes on educational meetings (FGB and programmes Human Movement Sciences)
- Notes on meetings with advisory board HMS
- Notes on meeting with chairs of the Programme Committees HMS
- Assessment Policy FGB
- Assessment programmes HMS
- Assessment forms thesis and research projects
- Teaching and Examination Regulations of the programmes of HMS
- List of used literature in the programmes of HMS
- Study guide of the programmes of HMS

Assessments and answering models of the following courses of the programme Musculoskeletal Physiotherapy Sciences:

- Movement Analysis
- Pain, Body and Mind
- Research Methodology MPS
- Challenges in Musculoskeletal Health





