Vlindersingel 220
NL-3544 VM Utrecht
+31 30 87 820 87
www.AeQui.nl
info@AeQui.nl

Master Human Movement Sciences VU Amsterdam

Report of the limited programme assessment
January 22nd and 23rd 2019

Utrecht
April 2019
www.AeQui.nl
Assessment agency for higher education

Colophon

VU Amsterdam
De Boelelaan 1105
1081 HV Amsterdam

Programme:	Master Human Movement Sciences: Sport, Exercise and Health
Specialisations:	Rehabilitation
	Biophysics of Sport
	Sport Psychology
	High Performance Coaching
Location:	Amsterdam
Mode of study:	Full-time
Croho-registration:	66950

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
AeQui VBI
Vlindersingel 220
3544 VM Utrecht
www.AeQui.nl

This document is best printed double sided.

Content

Summary

On January 22nd and 23rd 2019 an AeQui committee performed an assessment of the master programme in Human Movement 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 concretised with regard to content, level and orientation and meet international requirements. The intended learning outcomes tie in with the domain-specific reference framework, drawn up by all the Dutch programmes in human movement sciences in the Netherlands. In addition, the committee notes that the Dublin descriptors are adequately represented in the intended learning outcomes. The programme explicitly focuses on academic thinking, reasoning and research skills within the field of HMS and more specific the different tracks. The tracks are geared towards application of the learned knowledge and skills in specific fields of HMS, and prepare students for a future career. The tracks also add to the positioning of the programme. The committee appreciates the role of the advisory board.

Teaching-learning environment
The assessment committee assesses the orientation of the programme as **good**. The committee concludes that the programme enables students to realise the intended learning outcomes. The programme has a very coherent structure of mandatory and elective courses that ensure that students develop relevant academic skills and that a variety of themes are addressed at master level. The tracks provide students with ample room for choosing their own courses. The committee values that the tracks are directly related to possible fields of HMS in which students can continue their career. The committee supports the decision to incorporate a course on big data management and techniques to process data in the next academic year. The committee also suggests exploring the possibilities of offering the statistical courses of the research master programme in HMS as electives. The teaching methods used in the programme are interactive and small-scale. The committee suggests the programme to actively monitor group sizes in the practical of the course on biomechanics. The staff is very competent, enthusiastic and involved. The team of lectures meets on a regular basis to discuss the content of the programme / tracks. Lecturers have ample contacts in the field of HMS, inside and outside academia, and make these available for their students. The committee notes that the workload of lecturers needs continuous monitoring. The committee concludes that the programme applies the legal enrolment criteria.

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 HMS 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 human movement sciences. The committee appreciates that students are actively encouraged to start thinking about their research topic in an early stage. The committee concludes that the overall quality of the studied theses is adequate and agreed with the grades given. The committee however also notes that in general the topics of the theses / projects differed in quality and complexity.

Recommendations
The committee recommends specifying the intended learning outcomes. Currently they are quite general, and more specification can lead to a more differentiated profile and positioning of the programme.
The committee also suggests exploring the possibilities of offering the statistical courses of the research master programme in HMS as electives, to expand the possibility for students to acquire statistical proficiency.
Lastly, the committee recommends the programme to actively collect data about the whereabouts of the alumni. This can also provide valuable information for current students.

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 Human Movement 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 Buising
Secretary

Introduction

The master programme in Human Movement Sciences has an explicit academic focus, and aims for students to develop critical, sensitive and contextualised perspective on human movement sciences. Students are taught to formulate and solve both theoretical and practical research questions. In addition, the programme focuses on translating multidisciplinary scientific knowledge to applications in sports and healthcare practice, within the different tracks.

The institute
The master programme Human Movement 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 master programme Human Movement Sciences, the cluster of Human Movement Sciences also contains the bachelor programme Human Movement Sciences, the research master Human Movement Sciences and the master programme Musculoskeletal Physiotherapy 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 comprises 60 EC. The programme has a multidisciplinary character, that is reflected in the four tracks:
a) High-Performance Coaching;
b) Rehabilitation;
c) Biophysics in Sports and;
d) Sport Psychology.

The programme focuses on academic thinking and reasoning within the specific fields of HMS / the tracks. The intended learning outcomes of the programme are in line with the domain-specific frame of reference for the Human Movement Sciences programmes in the Netherlands.

The programme consists of mandatory and elective courses. The latter include electives within and outside the chosen track. The programme is completed with the master research project.

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 mas-

ter 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 21st and 25th. The site visit at VU University took place at January 22nd and 23rd, 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 concretised with regard to content, level and orientation and meet international requirements. The intended learning outcomes tie in with the domain-specific reference framework, drawn up by all the Dutch programmes in human movement sciences. In addition, the committee notes that the Dublin descriptors are adequately represented in the intended learning outcomes. The programme explicitly focuses on academic thinking, reasoning and research skills within the field of HMS and more specific the different tracks. The tracks are geared towards application of the learned knowledge and skills in specific fields of HMS, and prepare students for a future career. The tracks also add to the positioning of the programme. The committee appreciates the role of the advisory board.

Findings

The programme aims to offer students a critical, sensitive and contextualised perspective on human movement sciences. Students are taught to formulate and solve both theoretical and practical research questions. Students are expected to combine existing knowledge and, if necessary, supplement this with new knowledge, obtained through experimental, conceptual or historical research. The programme focuses on creative and critical use of knowledge, concepts and methods and academic training of students. Students are trained in the use of biophysical, physical, mathematical and behavioural methods and techniques, with a strong emphasis on precise reasoning, formalization and methodology.

Students learn to 1) identify, concretise and analyse problems, 2) undertake methodologically sound and practice-oriented data collection guided by topical research questions, and 3) communicate the result in a clear and unambiguous manner, such as in scientific articles. After completing the programme, students are able to apply their insights to daily problems and issues in the sports, exercise and health field as applied or embedded scientists in business companies, (semi-) public organizations, non-governmental organizations, social movements and as a lecturer in higher education. The latter can be achieved by taking the 'Docentenopleiding' course (30 EC) that provides students with a certificate to teach at a university of applied sciences.

The programme offers four tracks: a) High-Performance Coaching, b) Rehabilitation, c) Biophysics in Sports and d) Sport Psychology. The tracks represent the main markets in which students will work. The High-Performance Coaching track focuses on the application of scientific (biophysical and sport psychological) knowledge in the field of top sport coaching. This track is developed in collaboration with the Amsterdam Institute of Sport Science and responds to the demand of professional sport clubs for embedded scientists.

The Rehabilitation track addresses the application of biophysical (biomechanics/physiology) methods in the fields of health and rehabilitation. The track focuses on work in a clinical setting.

In the Biophysics in Sports track, students learn to tackle sports-related issues from a, predominantly, biophysical perspective (muscle and exercise physiology and biomechanics). The track focuses on the athlete, professional or amateur, and provides skills for scientific research on how to optimize physical performance and health.

The Sport Psychology track covers the broad field of sport psychology, and also provides potential links to health-related issues. Students are

trained in research dedicated to the optimization of mental performance. Students of this track are eligible for the post graduate course to become a certified sport psychologist.

The intended learning outcomes tie in with the domain-specific framework of reference for HMS, which was drawn up by the universities involved in this quality assessment. All Dutch HMS programmes meet twice per year to discuss developments in the field of human movement sciences and sport sciences. The intended learning outcomes are described by using the Dublin descriptors.

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 (international) human movement sciences and the Dublin descriptors.

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 programme has an explicit academic focus: students learn to formulate and solve both theoretical and practical research questions within a specific field of HMS (represented in the four tracks), through the use of academic research methods.

The committee notes that the intended learning outcomes are quite general. Specifying these can lead to a more differentiated profile and positioning of the programme.

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 has a very coherent structure of mandatory and elective courses that ensure that students develop relevant academic skills and that a variety of themes are addressed at master level. The tracks provide students with ample room for choosing their own courses. The committee values that the tracks are directly related to possible fields of HMS in which students can continue their career. The committee supports the decision to incorporate a course on big data management and techniques to process data in the next academic year. The committee also suggests exploring the possibilities of offering the statistical courses of the research master programme in HMS as electives. The teaching methods used in the programme are interactive and small-scale. The committee suggests the programme to actively monitor group sizes in the practical of the course on biomechanics. The staff is very competent, enthusiastic and involved. The team of lectures meets on a regular basis to discuss the content of the programme / tracks. Lecturers have ample contacts in the field of HMS, inside and outside academia, and make these available for their students. The committee notes that the workload of lecturers needs continuous monitoring. The committee concludes that the programme applies the legal enrolment criteria.

Findings

Programme
The programme comprises of mandatory and elective courses (3 or 6 EC each) and the master research project (24 EC). The programme is structured in periods of eight or four weeks. Apart from the afore mentioned track, students can also choose a free track. The free track consists of at least 21 EC of the elective courses and the obligatory courses. The Examination Board approves the chosen programme / courses.

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.

All students start, in the first period, with the mandatory Concepts in Human Movement Sciences course. This course addresses the biophysical and behavioural concepts that underlie current debates in HMS. In addition, students attend an introductory course with in the chosen track. The second period consists of more fundamental courses within the chosen track, whereas in the third period more applied courses prepare students for their research project. In the fourth and fifth period specialized elective courses are planned. Students attend these courses parallel to their research project. The master research project is planned from the third until the sixth period.

Each track comprises mandatory courses within the specific track and electives that apply for all tracks. The latter include a practical internship, a short literature review, the 'Docentenopleiding' course and several courses on entrepreneurship, electromyography and neuromechanics etcetera. Within the High-Performance Coaching track and the Rehabilitation track, students can choose their track specific courses from a list. This is not possible within the other two tracks.

The 'Docentenopleiding' course (30 EC) extends students' study time with at least half a year. Approximately 25 students per year enrol in this elective.

The High-Performance Coaching track starts with the Current issues in Sports and Exercise Physiology course that addresses topics such injury prevention and rehabilitation, clinical issues in sport psychology, ethical issues and moral behaviour in sport, group dynamics in sport, leadership roles in teams and peer leader-

ship. After this course, students choose electives on, for example, sport psychology, biomechanics, perceptual-motor learning and clinical exercise physiology.

Students of the Sport Psychology track attend the same courses as students from the High-Performance Coaching track, however without the courses on biomechanics, exercise physiology and epidemiology and professional athlete health.

The introductory course of the Rehabilitation track provides students with an overview of contemporary insights, methods and research questions in the field of rehabilitation from a human movement sciences perspective. The topics range from abnormal motor development in children to rehabilitation after physical or neurological impairments in adults. After this course, students choose electives on for example coordination dynamics, clinical exercise physiology, exercise and health or biomechanics.

The Biophysics in Sports course starts with two mandatory courses that address energy flow models, and an overview of the current knowledge of maximal neuromuscular performance during relatively high intensity exercise of short duration. After that, the current knowledge of short- and long-term adaptations of the neuromuscular system in response to training, aging, disuse and chronic disease, and how these relate to impaired muscle function are discussed. Students also attend the Applied Biomechanics course and the Clinical Exercise Physiology course.

Students and alumni are in general satisfied with their programme, the committee learned during the site visit. Students and alumni value the ample opportunities in choosing courses and pursuing their own interest and research topic. Students and alumni also noted that the programme could offer more statistical knowledge and skills.

Educational concept

The programme ties in with the five education principles of VU Amsterdam: 1) core issues in the field of expertise are leading, 2) students are familiarised with research culture and work as academic professionals, 3) students perform tasks that are representative for future work and are taken serious as partners in knowledge development, 4) reflection and independent judgment are stimulated, 5) special attention is given to the talent and ambition of individual students. Regarding the latter, talented students are involved in research programmes at the faculty or in joint research projects with labs in other countries. Students for example execute their master research project abroad in countries like Australia, New Zealand, US and Canada.

Teaching methods used include lectures, tutorials, practicals, self-study and discussion meetings. Students noted that in general the lectures are quite small-scale. The groups for the practicals of the course on biomechanics are however too large and students prefer working in smaller groups.

Intake

The legal enrolment criteria are applicable to the programme. A pre-master programme is in place for students who cannot be admitted directly to the programme. The programme aims to attract international students, approximately 10% of the current students have an international background.

A maximum number of 20 students can be admitted to the High-Performance Coaching track. To qualify, students have to hand in a motivation letter.

Staff

The teaching staff consists of lecturers from the HMS department as well as external lecturers for management and nutrition. The external lecturers are from Wageningen University and

Hogeschool van Amsterdam. 92% of the lecturers hold a PhD and 77% hold a basic teaching qualification. Some hold the senior teaching qualification. Lecturers are active in research and ensure a close relation between teaching and research. According to the programme, this ensures the academic level of the programme. PhD students are involved in reviewing scientific papers (under guidance of their supervisors). Guest lecturers are also invited regularly, for example a specialist on nutrition from NOCNSF.

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.

The majority of the lecturers the committee met, are also employed elsewhere, in the professional field or as lecturer or professor at a University of Applied Sciences. Even though lecturers are content with their role within the programme, they also experience a considerable workload. Lecturers expect that the 'studievoorschotmiddelen' for the university will be used for hiring extra lecturers.

Students and alumni value the passion and approachability of their lecturers. In addition, students and alumni appreciate the contribution of guest lecturers and the ample contacts of their lecturers with organisations in the field of HMS and especially in high performance sport. Students feel motivated by their lecturers.

Facilities
The department offers different (new) laboratories, software and equipment for students and staff. Students can also participate in so called 'dream teams' that offer the opportunity to compete with other universities on certain projects. 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. A practical internship is part of the elective courses. Every month a renowned scientist is invited to give a presentation at the departmental colloquium, which is open for students. Recently, the programme teamed up with the research master programme HMS in creating contacts, for students during their research project, with research departments of companies such as Philips Medical and other producers of technical medical devices.
The site visit showed that students participating in the so-called 'dream teams' value this very much. It provides them with an opportunity to apply their knowledge and academic skills.

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 has a very coherent structure, of mandatory and elective courses that ensure that students develop relevant academic skills and that a variety of themes are addressed at master level.
The programme offers students ample room for choosing their own courses, within pre-defined tracks or in a so-called free track. The committee values that the tracks are directly related to possible fields of HMS in which students can continue their career. This give students insight into what they can expect and prepares them accordingly.

The committee supports the decision to incorporate a course on big data management and techniques to process data in the next academic year. This is line with current developments in the field of HMS. The committee also supports the remark made by students to include more statistics in the programme. The committee suggests to explore the possibilities of offering the statistical courses of the research master programme in HMS as electives.
The committee appreciates the interactive and small-scale teaching methods used in the programme. The committee suggests the programme to actively monitor group sizes in the practical of the course on biomechanics. 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 programme applies the legal enrolment criteria. The available (new) facilities are very good.
During the site visit, the committee met very competent and enthusiastic staff members. The staff is very engaged with students and the programme. The committee also concludes that the department pursues a coherent approach towards teaching and that lecturers meet on a regular basis to discuss the content of the programme / tracks and the relation between courses. Lecturers have ample contacts in the field of HMS, inside and outside academia, and put these to good use for their students. This is also valued by the students. The committee notes however that the workload of lecturers needs continuous monitoring.

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

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 methods. 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 an 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 next academic year, the names of the examiner and the peer have to be mentioned on the front page of the exam.

Assessment methods include written exams (with open-end, essay questions or multiple-choice questions), knowledge clips, practical vlogs, review questions, assignments, (poster) presentations, papers, practical reports, research proposal and reviews about papers of other students. In some courses, mid-term exams or assignments, that contribute to the final grade, are used to motivate students to study actively throughout the course period. 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. The students the committee met during the site visit are in general satisfied with the level of the assessments. Students value the open-end questions in which they can demonstrate their knowledge. They confirmed that the mid-term assessments and assignments keep them focused on their studies. Students value the feedback they receive from their lecturers and the variety in forms in which feedback is provided.

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 and an examinations expert. In the near future, a legal expert will be added tot the board. 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 subcommittee 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 subcommittee 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, assessments 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 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 satisfied 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 also 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 HMS 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 human movement sciences. The committee appreciates that students are actively encouraged to start thinking about their research topic in an early stage. The committee concludes that the overall quality of the studied theses is adequate and agreed with the grades given. The committee however also notes that in general the topics of the theses / projects differed in quality and complexity. The committee recommends the programme to keep track of the alumni and their positions with HMS.

Findings

The programme is completed with the master research project (24 EC). With this project, students can demonstrate their ability to undertake independent academic research. Supervision is individual, although some collective tutoring takes place among groups of supervisees with similar topics and the same supervisor.

Students start with the research project in the first period, when they are matched with a supervisor. Students are informed about the available supervisors, their topical interests and specific projects on offer. Subsequently, speed-dating sessions are organised where small groups of students meet individual supervisors. Students are also encouraged to approach supervisors outside these sessions. At end of the first period, students denote their preferences for supervisors and research topics, after which the thesis coordinator assigns students to a supervisor. In the second period, students have their first meetings with their supervisor to discuss ideas for the research project. At the end of the third period, students have written their research proposal, with guidance from their supervisor and students start conducting their research.

The research report and oral presentation are assessed by the supervisor and an independent second examiner, by using an assessment form. 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.

The programme does not systematically collect data on alumni.

The students and alumni the committee met, remarked that they are prepared for a variety of opportunities with the field of HMS. Their own profile, created with choices made in the programme is leading in this. Even though they are not trained for a specific position, students feel well prepared for their future career.

Considerations

The committee concludes that the programme has an adequate graduation procedure in place. Students are actively encouraged to start thinking about their research topic at an early stage in the programme.

The committee reviewed fifteen theses of the programme. The committee concludes that the overall quality of the studied theses is adequate and graduates of the HMS programme achieve the required level. In general, the committee agreed with the grades given. The theses were adequately written and showed a sufficient use of research methods. The committee however also notes that the topics of the theses / projects differed in quality and complexity regarding the research question or the experimental approach.

The meetings with students and alumni during the site visit confirmed the adequate level of the thesis / the programme. The students and alumni the panel met are capable of creating their own career path within human movement sciences.

The committee recommends the programme to actively collect data about the whereabouts of the alumni. This can also provide valuable information for current students.

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

Appendices

Appendix 1 Assessment committee

Naam panellid (incl. titulatuur)	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 biomechanics en (neuro)fysiologie in motor behaviour (in het bijzonder sport) en computer modelling van biomechanica en spierfunctie in coördinatie. Hij doceert en is curriclumontwikkelaar op het gebied van biomechanica, motor control en coordinatie op alle niveaus. Hij is sinds 2014 wetenschappelijk manager van Centre for Elite Sports Reseach en sinds 2013 section editor van Human Movement Sience (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 examinator 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 examinator 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

	op als reviewer van internationale fondsen en van journals op het gbeied 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 assingment (competitive position awarded for 10 years).
Vera L. Broek, student-lid	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).
drs. Raoul R. van Aalst	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.

The panel was supported by Titia Buising, 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

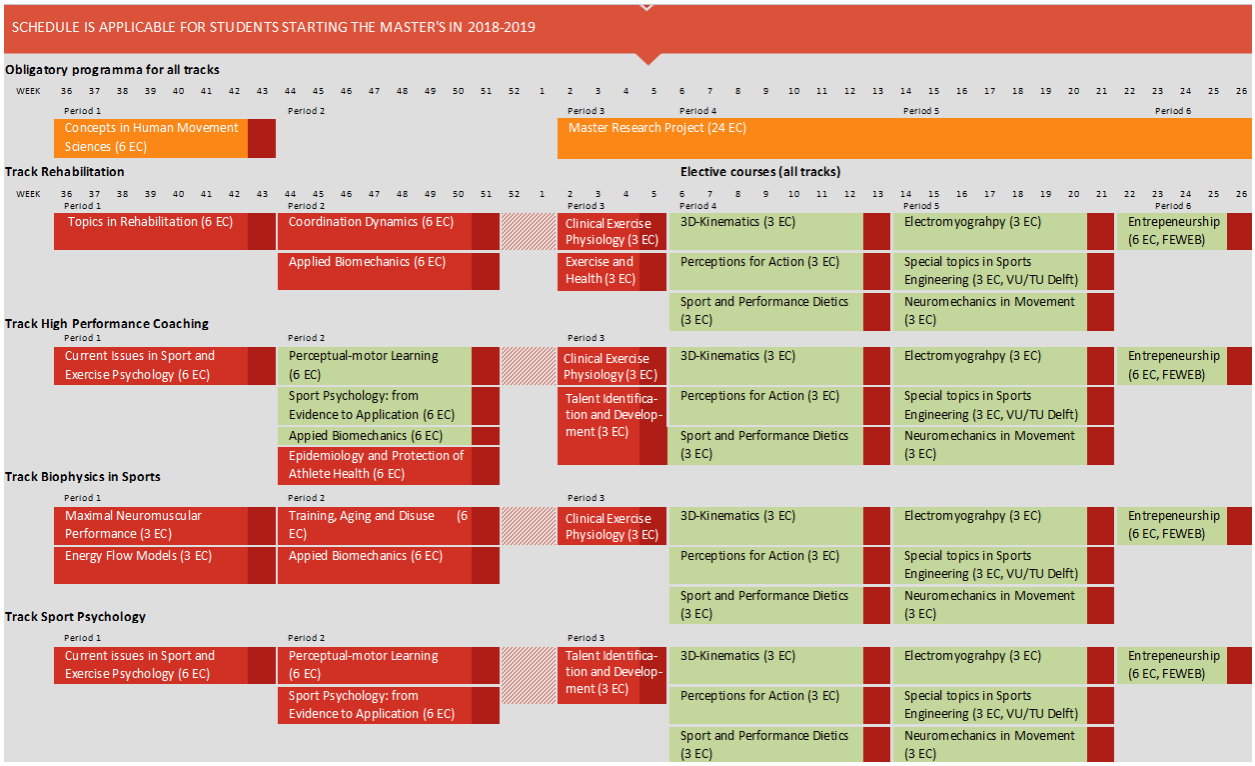
9.00 - 10.00 hours:	Lecturers bachelor programme Human Movement Sciences
10.00 - 11.00 hours:	Students and alumni bachelor programme Human Movement Sciences
11.15 - 12.15 hours:	Lecturers master programme Musculoskeletal Physiotherapy Sciences
12.15 – 13.15 hours:	Students and alumni master programme 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

Dublin-descriptor **Knowledge and understanding:**	
Provides a basis or opportunity for originality in developing or applying ideas often in a research context	1. Has knowledge of the current theories and insight in the present research questions in the fields of Sport, Exercise and Health. 2. Can collect scientific information efficiently and is able to correctly interpret knowledge concerning specific topics in the fields of Sport, Exercise and Health. 3. Can develop a research plan in which design, execution and analysis of the study are properly described. 4. Has knowledge of advanced research methods and techniques relevant for the field
Dublin-descriptor: **Applying knowledge and understanding:**	
[through] problem solving abilities [applied] in new or unfamiliar environments within broader (or multidisciplinary) contexts	5. Has mastered experimental and analysis methods to plan, set-up and execute applied research, particularly in the fields of sport, exercise and health. 6. Can apply HMS related knowledge on societal questions, particularly regarding sport, exercise and health. 7. Can lay links between data coming from several fields of research. 8. Can think interdisciplinary, has insight in relevant disciplines
Dublin-descriptor: **Making judgements:**	
[demonstrates] the ability to integrate knowledge and handle complexity, formulate judgements with incomplete data	9. Can critically evaluate methods and results of research. 10. Has insight in the scientific and social relevance of the current research in the fields of sport, exercise and health.
Dublin-descriptor: **Communication:**	
[of] their conclusions and the underpinning knowledge and rationale (restricted scope) to specialist and non-specialist audiences (monologue) ..	11. Can transmit scientific knowledge orally, using modern presentation techniques and coordinated on the public concerned. 12. Can present results of research in writing at the level of a professional journal and uses references correctly. 13. Is able to contribute content wise to scientific discussions concerning the planning of research and interpreting the results. 14. Is able to communicate at level with experts from several fields hereby contributing to linking these fields. 15. Can cooperate in interdisciplinary composed teams.

Dublin-descriptor: **Learning skills:**	
study in a manner that may be largely self-directed or autonomous	16. Is able to reflect on obtained knowledge and skills. 17. Is capable of evaluating its own functioning and setting own learning aims, both by self-reflection and in conversation with others. 18. Has gained practical experience in doing research during a scientific research project and knows own strengths and weaknesses. 19. Can independently acquire information on the basis of scientific and professional literature and analyse and critically evaluate this information. 20. Has the skill to learn new knowledge and skills independently in a future situation within the framework of lifelong learning.

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 Human Movement 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 Human Movement Sciences:

- Concepts in Human Movement Sciences
- Applied Biomechanics
- Sport Psychology: from evidence to application
- 3D Kinematics