

Bachelor Human Movement Sciences University of Groningen

*Report of the limited programme assessment
January 24 and 25, 2019*

Colophon

University of Groningen
A. Deusinglaan 1
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Programme: Bachelor Human Movement Sciences
Location: Groningen
Mode of study: Full-time
Croho-registration: 56950

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The committee was presented to the NVAO for approval.

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Summary

On January 24 and 25 2019 an AeQui committee performed an assessment of the bachelor programme in Human Movement Sciences of University of Groningen. The overall judgement of the committee is that the quality of the programme is **good**.

Intended learning outcomes

The committee assesses the intended learning outcomes as **satisfactory**. The committee concludes that the intended learning outcomes (or competences) have been concretised with regard to content, level and orientation and meet international requirements. The competences 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 competences. The competences apply to the bachelor programme as well as the master programmes of the HMS department. The level at which these competences are developed is however different.

The committee expects that the new outline of the programme, with a focus on scientific and societal HMS and accompanying roles, will provide students with a clearer understanding of their future in HMS. Translating these roles into learning outcomes per course can add to this. The committee supports the intention to appoint an external 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 competences. The structuring of the programme in clusters adds to the coherence of the programme. The programme shows a strong focus on neuroscience and statistics. The committee appreciates the Professional and Personal Development cluster, which gives students a perspective on HMS in practice, both in an academic and a professional setting. The academic assignments are also helpful in this. The committee also values the design of the second-year Skills lab course, where students

practice using specific equipment. The committee supports the development of an academic writing programme as has been set in motion by the programme.

The staff involved is competent, engaged and enthusiastic. Lecturers meet on a regular basis to discuss the content of the programme. In addition, ample technical support is available. The programme has succeeded in creating a strong system with student assistants, junior lecturers and master students guiding bachelor students. The committee appreciates the involvement of senior students as mentors in the first year. Students are actively involved in the programme; by means of the study association and as (advisory) members in different committees / boards. The committee concludes that the legal enrolment criteria are applicable to the programme.

Assessment

The assessment committee concludes that the programme has an adequate system of assessment in place, and assesses this standard as **satisfactory**. The committee concludes that an adequate system of assessment is in place. The competences 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 plan for each course, the more-eye-principle and random reviews of assessments and theses by the board of examiners. The level and quality of the different assessments studied by the committee during the site-visit was adequate. The board of examiners is adequately organised and safeguards the quality of the assessments. The committee appreciates the involvement of an advisory student member in the board.

Achieved learning outcomes

The committee assesses this standard as **good**. Based on the studied documents and the interviews, the committee concludes that graduates of the bachelor programme HMS more than achieve the required level and the competences. In addition, an adequate graduation procedure is in place. The committee concludes that the overall quality of the studied theses is high and agreed with the grades given. The theses can match with theses from master programmes. The theses studied were for example well written and employ state-of-the art experimental methods and analyses. The level of the programme was confirmed during the meeting with stu-

dents, who seem to be well spoken and capable of creating their own career path within human movement sciences.

Recommendations

The committee concludes that the competences are well structured in competence areas. The committee is of the opinion, however, that the translation of the competences into specific learning goals per course can be improved. It recommends to do so, with the new competences / roles in mind.

The committee recommends the programme to invest in internal and external calibration of theses with lecturers.

All standards of the NVAO assessment framework are assessed positively; hence the committee awards a positive recommendation for the accreditation of the bachelor programme Human Movement Sciences of University of Groningen. The committee concludes that the overall assessment of the programme is **good**.

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

Raoul van Aalst
Chair

Titia Buising
Secretary

Introduction

The bachelor programme in Human Movement Sciences presents itself as a multidisciplinary programme on studying human movement behaviour. The programme aims to provide students with solid scientific knowledge in the biomedical and behavioural domains, with an accent on neurosciences. Distinct attention is paid to acquiring methodological and statistical skills, including hands-on experience in methods for measuring and analysing movement.

The institute

The bachelor programme Human Movement Sciences (HMS) is offered by the Department of HMS. The department also offers the master programme in Human Movement Sciences and the master programme in Sport Sciences. The department HMS is part of the University Medical Centre Groningen (UMCG), which also offers bachelor and master programmes in medicine and dentistry.

The department's vision on teaching ties in with the vision and ambition of the faculty and the university. The department aims for a strong link between education and research and between lecturers and students. Students are expected to be active learners and commitment and responsibility are stimulated. The faculty's and university's primary focus is on healthy ageing. The university wants to contribute to innovative solutions for the societal challenges that have emerged due to an ageing population. This focus is also reflected in the HMS programmes. The HMS programmes cooperate closely with the rehabilitation and the orthopaedics departments within UMCG. In addition, each year ten graduates from the bachelor programme in HMS can enrol in the pre-master programme in Medicine.

Within the department of HMS, the head is responsible for all three programmes and the research. The curriculum coordinator holds the daily responsibility and the curriculum manager is involved in the organisation and quality assurance of the HMS programmes. Next to supporting staff, a student advisor and an internationalisations officer are part of the department. Aca-

demical and support staff have weekly lunch meetings to discuss relevant developments and enhance commitment.

The programme

The Dutch taught bachelor programme in Human Movement Sciences (HMS) comprises three years and 180 EC. The programme aims for students to obtain a firm basis of multidisciplinary scientific knowledge and skills. Students are educated to become active, independent and critical professionals who are able to solve both fundamental and societal HMS related questions.

The programme is structured in clusters, which cover domain specific courses, academic level of thought and practice, professional and personal development and research. These clusters also reflect the areas of competence of the programme. Within these first three clusters, courses are offered in each year of the programme. The final cluster, research, is part of the final phase of the programme.

In the first year, a range of biomedical, neuroscientific and behavioural topics are covered. During the programme, the topics and disciplines become more integrated. In the second year, the focus is on more HMS applied knowledge. The third year comprises, courses, the minor and the bachelor graduation project. During the programme, students can focus on three fields of interest: healthy ageing, rehabilitation or sports. These correspond with the research areas of the department of HMS. The graduation project is also carried out within one of these fields of interest.

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 and master 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 programme Human Movement Sciences is a two-year programme. The programmes have close relations 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 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

University of Groningen assigned AeQui VBI to perform a quality assessment. In close cooperation 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 (apart 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 University of Groningen took place at January 24th and 25th, in accordance with the programme in attachment 2. The committee explicitly oriented itself on the cluster of which the programme is 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 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 (or competences) have been concretised with regard to content, level and orientation and meet international requirements. The competences 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 competences. The competences apply to the bachelor programme as well as the master programmes of the HMS department. The level at which these competences are developed is however different.

The committee expects that the new outline of the programme, with a focus on scientific and societal HMS and accompanying roles, will provide students with a clearer understanding of their future in HMS. Translating these roles into learning outcomes per course can add to this. The committee supports the intention to appoint an external advisory board.

Findings

The intended learning outcomes of the programme are formulated in terms of competences. The programme covers four competence areas: a) the domain of human movement sciences, b) academic level of thought and practice, c) professional and personal development and d) human movement sciences research. The latter competence area includes integration and application of the three basic areas, focusing on knowledge, skills and behaviour, respectively.

The areas of competences cover nine competences. These areas and competences are the same for all three HMS bachelor and master programmes. The competences are however, developed at a different level. For the bachelor programme three levels are defined and for the master programmes two levels.

The competences are specified in more detailed learning goals regarding knowledge, understanding and skills related to HMS.

The use of competences ties in with the department's vision on learning and teaching. The competences reflect the multi- and disciplinary approach of HMS, the focus on a fundamental level of academic thinking and skills and on domain specific knowledge and professional behaviour.

Within the competences, three levels are distinguished for the bachelor programme: a) basic

knowledge and understanding, b) thorough knowledge and understanding and c) systematic application and integration of the competences into a research project. The first, basic level, requires that students become acquainted with all competences of the HMS curriculum in the first year. This broad orientation ensures that students can determine whether they have made the right choice. The second, thorough level, includes the separate acquisition and mastery of the first seven competences. The programme believes that a firm foundation of knowledge and skills is a prerequisite for solving problems in the HMS domain in a relatively independent and self-regulated manner in the final phase of the programme. At the third level, realised in the final phase of the programme, students become acquainted with research in the human movement sciences. Students learn to proceed through all the stages of the research cycle and to complete a comprehensive research project.

The competences 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.

The competences are also based on the Dublin descriptors. The department of HMS uses the

Dublin descriptors as a checklist for verifying the level of the competences.

The programme notes that even though in the graduation phase students deepen their understanding and research experience and are equipped with the fundamental competences for the labour market, their employment possibilities are limited. The programme therefore prepares students primarily for continuation of their education in a master programme.

In the near future, the programme plans on installing an external advisory board. This board will help in identifying relevant societal and scientific developments and advise on the translation of those developments into the programmes.

The department of HMS presented an outline of the future positioning of the HMS programmes (to be accomplished in 2024). In this outline, the programmes have an explicit scientific as well as a societal focus. And the core competences have been translated in roles students are prepared for (expert, academic, investigator, communicator, team player and professional). With the introduction of roles, the programme wants to offer students a clearer perspective on their future opportunities in the field of HMS, both academic and professional. The department aims to create an academic workplace (or learning community), where students, lecturers and PhD students collaborate with the professional field in academic assignments and graduation projects. Students can choose for a scientific or societal path and execute their academic assignments accordingly.

Considerations

Based on the interviews and the examination of underlying documentation, the committee concludes that the intended competences of the programme tie in with (inter)national requirements for (international) human movement sciences and the Dublin descriptors. The competences are the same for the bachelor programme and the two master programmes; the level at which the competences are developed is however different.

Based on an overview of the relation between courses and competences (as provided in the assessment plan) and the course descriptions, the committee notes that all competences are covered in the programme.

The committee concludes that the competences are well structured in competence areas. The committee is of the opinion, however, that the translation of the competences into specific learning goals per course can be improved. It recommends to do so, but with the new competences / roles in mind.

The committee appreciates the outline of the new positioning of the programme, in which the focus is on scientific and societal HMS. The formulation of the competences in roles will provide students with a clearer understanding of their future in HMS. Translating these roles into learning outcomes per course can add to this.

The committee supports the intention to appoint an advisory board. This will contribute to the connection of the programme and intended learning outcomes to developments in the field of human movement sciences in practice.

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 competences. The structuring of the programme in clusters adds to the coherence of the programme. The programme shows a strong focus on neuroscience and statistics. The committee appreciates the Professional and Personal Development cluster, which gives students a perspective on HMS in practice, both in an academic and a professional setting. The academic assignments are also helpful in this. The committee also values the design of the second-year Skills lab course, where students practice using specific equipment. The committee supports the development of an academic writing programme as has been set in motion by the programme.

The staff involved is competent, engaged and enthusiastic. Lecturers meet on a regular basis to discuss the content of the programme. In addition, ample technical support is available. The programme has succeeded in creating a system with student assistants, junior lecturers and master students guiding bachelor students. The committee appreciates the involvement of senior students as mentors in the first year. Students are actively involved in the programme; by means of the study association and as (advisory) members in different committees / boards. The committee concludes that the legal enrolment criteria are applicable to the programme.

Findings

Programme

The Dutch taught programme (180 EC) is offered as a full-time programme. The programme is structured into clusters, that match the before-mentioned competence areas. These clusters are part of all three years. Within the clusters, courses of 5 EC are offered. In general, the level and the complexity of the courses increases during the programme. The first-year addresses basic and fundamental knowledge of HMS. In the second year, the focus is on HMS applied knowledge. In the third-year integration and application is part of the courses, the minor and the bachelor graduation project.

Domain specific cluster

The domain specific cluster includes general biomedical sciences, biomedical neurosciences and behavioural sciences. The general biomedical courses in the first year provide students with a basic understanding of the human body. In the second year, more specified HMS knowledge is addressed in for example the Exercise Physiology course and the Movement Analysis courses. In the third year, specific movement disorders are

addressed in the Pathology and Movement Interventions course. In this course, knowledge from behavioural sciences, neurosciences and biomedical sciences is integrated. The biomedical neurosciences courses show a comparable build up. In the first year, the basic concepts of neurophysiology are addressed. In the second year, this knowledge is deepened in courses that address the central nervous system. The third year Neuropsychology course integrates biomedical neurosciences and behavioural sciences. Behavioural sciences in the first year includes an introduction to psychology and to motor control. In the second year this knowledge is deepened and put in to a more specific HMS context in courses such as the Psychology of Movement and Exercise course, the Motor Development and Learning course and the Perception and Action course. In the third year, behavioural sciences is integrated with biomedical neurosciences in the beforementioned Neuropsychology course.

Academic level of thought and practice cluster

This clusters encompasses methodological, statistical and research skills. Students are introduced to these skills in various courses in the

first year. Students also learn to use Matlab, in the Introduction to programming course. Matlab is used by students in courses such as Biomechanics, Movement Analysis and the graduation project. In each year, a course on statistics is programmed, where students start with basic statistical skills in the first year and in the third-year topics such as experimental research and ANOVA/ANCOVA) are addressed.

The site visit revealed that the Matlab course is quite challenging for students. Applying Matlab in other courses and practicals really helps their understanding of the programme.

In the second year, the Skills Lab course introduces students to movement measurement and analysis systems. Students gain hands-on experience in using technological equipment.

Academic writing and presenting are an integral part of the programme. This is trained in written assignments and presentations for the different courses, and supported by the use of the Academic Writing Manual for HMS students. The programme is currently developing a writing programme with practicals, writing criteria, practicals and fixed feedback moments. With this, the programme wants to ensure that students receive enough feedback on their written products.

Personal and professional development cluster
 This cluster focuses on student's professional orientation. This starts in the first year with introducing students to the field of HMS, the three research areas of the department and a realistic HMS year-round case that addresses an HMS related problem. In the second year, students are informed about the specialisation in the master programmes and the current focal points in research at the department. In addition, alumni inform students about the different academic and professional career options and an annual labour-market day is organised. Professional skills such as information retrieval, writing, read-

ing and discussing are also addressed. The second year Bachelor Monitor course includes students exploring and reflecting on HMS and sport sciences. Students attend for example conferences, career events and excursions to actively explore the professional opportunities and societal relevance of HMS. The programmes study association is actively involved in organising such excursions. In addition, students reflect in small groups on their study programme thus far and discuss their goals for the future.

Personal and professional development in the third year is part of the minor programme. Where students can for example choose a minor from the university (for example the minor Sport Science), put together their own set of courses, opt for an educational orientation (with student assistantship and didactic training) or conduct an academic assignment. The latter can consist of an internship in a company or organisation or involvement in an ongoing research project.

The site visit revealed that students value the first year Introduction to HMS course and the second year Bachelor Monitor course. Since the first year is quite broad, these courses give them more insight into what HMS really is and in their future career options in HMS.

The committee also learned that the faculty wants to focus on developing instruments for students professional or career orientation. Digitalisation of the Bachelor Monitor and using the experiences within the medicine programmes is part of this.

Integration and application cluster

In the third year, students are encouraged to develop their own view of HMS and apply their knowledge to movement-related problems. In the Development of movement interventions course, students work together on designing a movement intervention programme for an HMS relevant target group. In the bachelor graduation project, students study realistic research

questions in a lab-based or field-oriented setting. This is elaborated on in standard 4.

The students the committee spoke with are in general quite content with the programme. They recognise the broad and fundamental character of the first year. Students also mentioned that for students with a background in 'Mathematics A', the Mathematics course is quite challenging.

Educational concept

The department's vision on learning and teaching is characterised by a focus on multidisciplinary knowledge and academic skills, connection between teaching and research, lecturer's autonomy and ownership, guidance to a solid level of academic working and thinking, orientation and specialisation, integration of knowledge and skills, learning in a meaningful context, self-regulation, basic quality as a prerequisite for excellence and ensuring basic quality in a straightforward and efficient manner. Some of these are explicitly visible in the structuring of the programme, for example, multidisciplinary knowledge and academic skills and guidance to academic working and thinking are, together with the integration of knowledge and skills, translated into the beforementioned clusters in which the programme is organised.

The programme uses a variety of teaching methods including for example lectures, mentoring groups, practicals, seminars and practical assignments. The first year comprises on average 14 to 16 contact hours per week and the second year 12 to 14 contact hours per week. Due to the structure of the third year, the amount of contact hours is limited to an average of 6 hours per week.

During the site-visit, the committee learned that students value the variety in teaching methods used in the programme.

Staff

The department of HMS consists of 26 scientific staff members. Lecturers are active in the bache-

lor programme as well as the master programmes. In general, staff members are expected to be involved in teaching (50%), research (40%) and other relevant activities (10%). In addition, thirty PhD students are involved in the department. PhD students are involved in the programmes as supervisors of graduation research and as junior teachers. Junior teachers receive the university's didactical training. Besides junior teachers, student-assistants are also frequently involved in practicals and working groups.

Lecturers from the Department of Anatomy and Medical Physiology are also involved in the bachelor programme. All lecturers have a university teaching qualification.

Students are in general quite content with their lecturers, the committee learned during the site visit. Lecturers are competent and approachable. Students also value the feedback from their lecturers.

During the site visit, lecturers remarked that they meet on a regular basis, also with colleagues within a cluster. During these meetings they discuss, for example, the coherence of the courses within the cluster.

Facilities

The department of HMS offers different laboratories, software and equipment for students and staff. This is maintained and supported by the technical support group. The technical support group also provides instructions for the more complex lab facilities and develops equipment and software if necessary.

Students are guided throughout the programme by lecturers, the study advisor and a mentor. The mentorship is a mandatory part of the first year Introduction to HMS course. Mentors are dedicated senior bachelor or master students, who supervise eight students during their introductory phase and group assignment. For the mentors, this is part of the Introduction to Teaching course, an elective course which is part of their minor programme. Nestor is used as a digital

learning platform. The binding study advice after the first year comprises 45 EC.

During the site visit, the committee met with representatives from the education programme committee. It became clear that in recent years the committee's focus has shifted from discussing all course evaluations to discussing, and advising the curriculum coordinator, on specific themes. This includes, for example, the procedure for the academic assignments (part of the third-year minor programme). In addition, the committee is involved in the current development of an academic writing programme. The representatives of the committee also value the contact with the curriculum coordinator. The student representatives in the education programme committee, the advisory student member of the board of examiners and a representative from the study association meet on a monthly basis to discuss current issues and avoid overlap. This year, a pilot has started with the study association evaluating the courses with students (after each period) in order to increase the response of the course evaluations. The education programme committee also aims to get more insight in the whereabouts of the alumni of the bachelor programme.

Considerations

The committee concludes that the programme, the teaching-learning environment and the staff involved enable students to achieve the intended competences. The clusters add to the coherence of the programme. The clusters also ensure that the different aspects of HMS are addressed throughout the entire programme. Neurosciences and statistics are a comprehensive part of the programme. The committee especially appreciates the Professional and Personal Development cluster, which gives students a perspective on HMS in practice, both in an academic and a professional setting. The academic assignments are also helpful in this.

Based on the studied documents, the committee concludes that relevant and up-to-date literature is used in the programme. In addition, scientific articles are used in the different courses.

The committee values the design of the second-year Skills lab course, where students practice for example measuring skills with specific equipment. The course offers students a nice insight into a variety of techniques and equipment. In this course, students are supervised by student assistants.

The committee notes that the legal enrolment criteria are applicable to the programme. For students with a background in 'Mathematics A', the committee supports the student's suggestion to plan the extra tutoring earlier in the Mathematics course.

Even though academic skills are sufficiently addressed, the committee supports the development of an academic writing programme, as has been set in motion by the programme.

The committee learned that even though an international exchange or internship is possible in the minor programme, students have to organise this themselves. The committee believes that a bit more support in this could help a lot.

During the site visit, the committee met with very competent and enthusiastic staff members. The staff is very engaged with students and the programme. 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. In addition, ample technical support for students and lecturers is available.

The programme has a well-developed system in place with student assistants, junior lecturers and master students guiding bachelor students. The committee expects that the deployment of junior lecturers will have a positive effect on the workload of the lecturers.

The committee appreciates the involvement of mentors in the first year. This provides students with accommodating guidance in an important phase of the programme. During the site visit, the committee noted that the study association is very active in organising events, both social and educational. This is valued by students and

lecturers. The education programme committee is also active and involved. In addition, the committee would like to express its appreciation for the active involvement of students in different committees and boards within the faculty.

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

3. Assessment

The committee concludes that an adequate system of assessment is in place. The competences 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 plan for each course, the more-eye-principle and random reviews of assessments and theses by the board of examiners. The level of the different assessments studied by the committee during the site-visit was adequate. The board of examiners is adequately organised and safeguards the quality of the assessments. The committee appreciates the involvement of an advisory student member in the board. The committee recommends the board of examiners to invest in internal and external calibration of theses with lecturers.

Findings

The programme ties in with the faculty's and university's assessment policy. Based on these policies, an assessment plan (including an assessment programme) is drawn up for the bachelor programme. The assessment plan is based on four principles: a) to assess whether the intended learning outcomes have been achieved, b) providing feedback to students and supporting and guiding self-directed learning, c) enable substantial autonomy and ownership of lecturers in their approach and d) ensuring basic quality in a straightforward and efficient manner.

Assessment methods vary from written exams and presentations to reports and individual or group assignments. The second year Skills lab course is assessed with a video presentation, a lab notebook or a technical note. Written exams comprise at least 25% of essay questions. With this requirement, the programme wants to ensure that reasoning and writing skills are taught and the underlying thinking and learning processes are assessed. The programme recently started with the gradual introduction of digital testing.

Predetermined answer models are used for the grading of assessments. The appointed course examiner is responsible for the construction of the assessment and the answer model. In constructing assessments, the four-eye principle is used. Grades for multiple choice exams are

cleared only after the examiner reviewed the statistical evaluation of the exam and the accompanying remarks by students.

As mentioned before, the third level in the programme is characterised by integration of the knowledge and skills learned in the different courses. In general, students reach this level the third year. The assessment methods used match the expected level in the form of for example written scientific reports and oral presentations. The bachelor graduation project is also an integrated assessment. This is elaborated on in standard 4.

Students are informed about the assessments in the course descriptions and during the courses. The students the committee met with are in general content with the level of the assessments and the variety of skills addressed in the assessment methods, even though quite a lot of multiple-choice exams are used. They value the practice exam questions they receive from their lecturers; these tie in with the actual exam questions. Students also remarked that the planning of the resits can be improved by organising for example an extra moment during the summer.

Board of examiners

The board of examiners is responsible for ensuring compliance with the competences of the bachelor and master programmes HMS at the required level. The board supervises the execu-

tion of the assessment, draws up guidelines, appoints examiners, monitors and sets exam results and deals with fraud and appeals. The board supervises the programmes assessment plan and randomly checks whether assessments meet the established criteria. The board consists of lecturers, two external members and an advisory student member. Board members participate in the universities training and feedback meetings.

Currently, the board checks on the quality of the assessments. In the near future, the intention is that this will be organised and processed more centrally from the Bureau for Medical Education of the UMCG, leaving room for the board to focus on content analysis. In addition, the programme assessments plan will be included as a formal part in the PDCA cycle of the UMCG as of the academic year 2019-2020.

The board is also planning external benchmarking of the final level of bachelor students in comparison with students from other bachelor's degree programmes.

The board re-assesses a random sample of theses each year. This is done to check whether the theses have been graded correctly and whether the subjective differences in assessment are acceptable.

Recently, new assessment forms have been implemented for the bachelor graduation project, that are in line with the assessment forms used in the master programmes.

The meeting with the board of examiners during the site visit learned that all multiple-choice exams are statistically evaluated. The board meets on a monthly bases to discuss developments, the results of the checks on assessments and theses and requests from students etcetera. The advisory student member provides the board with advice on assessments from a student perspective.

Considerations

The committee concludes that an adequate system of assessment is in place. The quality assurance of the assessment system is solid and effective measures are taken to guarantee the validity, reliability and transparency of the assessments. The assessment plans, more-eye principle, the checks by board of examiners all add to this. 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 adequate.

The board of examiners is adequately organised and safeguards the quality of the assessments. The committee appreciates the involvement of an advisory student member in the board. Calibration currently takes place between the first and second examiner of a theses and the committee advises to broaden this. The committee therefore recommends the board to invest in internal and external calibration of theses with lecturers.

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

4. Achieved learning outcomes

Based on the studied documents and the interviews, the committee concludes that graduates of the bachelor programme HMS more than achieve the required level and the competences. In addition, an adequate graduation procedure is in place. The committee concludes that the overall quality of the studied theses is high and agreed with the grades given. The theses can match with theses from master programmes. The theses studied were for example well written and employ state-of-the-art experimental methods and analyses. The level of the programme was confirmed during the meeting with students, who seem to be well spoken and capable of creating their own career path within human movement sciences.

Findings

The programme is finalised with the bachelor graduation project (20 EC). Students perform a partial research project, usually in small groups and under clear supervision. Students conduct their research in a genuine research setting with various projects and teams. In this setting, students cooperate with PhD students, master students and, sometimes, external professionals. Within the small group, students focus on their own individual research question. Students are expected to collect and analyse data, discuss the results and present these orally and in the individual thesis. Students present their results in a final presentation.

Students are informed about research projects and topics during preparatory lectures and can subsequently register for one of the projects. Student's progress is monitored by their supervisor and during lectures in which students present their results to their peers and supervisor.

Two examiners are involved in grading the bachelor theses, by using an assessment form.

As mentioned before, the programme primarily prepares students for a master programme. Survey results show that the number of students choosing one of the department's master programmes is comparable to students choosing other master programmes. The premaster programme in Medicine reserves eight places for graduates from the bachelor programme HMS,

the premaster programme in Dentistry offers two places. These graduates have to graduate nominally, with an average grade of seven, not more than one resit per assessment and be in the top eight of graduates opting for the premaster programme in Medicine, respectively in the top two for the pre-master in Dentistry.

The committee learned during the site visit that the students found these requirements realistic and doable. An exchange or internship abroad is not possible since this usually leads to a (minor) delay in the programme.

The programme explicitly prepares students for the inherent unclear career perspective of an academic study. Through personal and professional development and academic skills students are prepared for scientific work as well as more applied positions. During the site visit, students seemed not particularly interested in a more research-oriented master programme. Even though, they agree with the relevance of research skills for their future career, they would prefer a programme that combines research and practical skills.

The programme keeps in touch with the alumni through alumni days that are organised twice per year, the alumni committee that is part of the study organisation and the biannual alumni survey.

Considerations

The committee concludes that the programme has an effective graduation procedure in place. In the final phase of the programme, integration and application of the knowledge and skills learned takes place.

The committee reviewed fifteen theses of the programme. The committee concludes that the overall quality of the studied theses is good and graduates of the bachelor programme HMS even exceed the required level. In general, the committee agreed with the grades given and concludes that the studied theses can easily compete with theses at master level. The theses were well written, employ state-of-the art exper-

imental methods and analyses, and provide well-founded interpretations considering the level expected from bachelor students.

The meetings with students and alumni confirmed the high level of the theses / the programme. The students and alumni the panel met were well spoken and are capable of creating their own career path within human movement sciences.

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

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 examinerator 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 examinerator 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

Thursday 24 January – detailed programme and delegations

08.30-09.00	Arrival at the UMCG, Antonius Deusinglaan 1
09.00-09.45	Welcome and first meeting with management
09.45-11.15	Show Case
11.15-11.45	Break
11.45-12.45	Board of Examiners
12.45-13.30	Lunch
13.30-14.30	Master students HMS and SpS
14.30-15.30	Lecturers Master's programmes HMS an SpS
15.30-15.45	Break
15.45-16.45	Programme Committee
16.45-17.30	Alumni

Friday 25 January – detailed programme and delegations

Bachelor students HMS

Lecturers Bachelor's programme HMS

Break

Management Plus - Challenges and Dilemmas

Lunch and internal meeting AeQui Panel

Presentation of initial results - Boeringzaal

Reception and end of Site-visit

Appendix 3 Intended learning outcomes

Global objectives and profile

The aim of the Bachelor's degree programme in Human Movement Sciences (HMS) is for the student to:

- a. acquire content-related knowledge of, skills related to and understanding of the field of human movement sciences;
- b. acquire an academic level of thought and practice;
- c. prepare for further study in HMS or a related field. The student has the right to admission to the University of Groningen's Master's degree programmes in Human Movement Sciences and Sport Sciences.

These general programme objectives are related to the following profile for the Groningen University Bachelor in Human Movement Sciences:

The University Bachelor in HMS is a broadly educated and academically trained graduate with knowledge of movement, movement coordination, motor problems, and ways of influencing motor behaviour. HMS Bachelors have a broad understanding of the field of the human movement sciences, and the necessary skills to read and interpret scientific literature. In addition, they are familiar with methodology and data analysis, and have the necessary skills to collect, analyze and interpret empirical data under supervision of staff. Furthermore, they are able to translate the acquired knowledge and skills into relevant human movement science issues and communicate this in the Dutch language.

Learning outcomes of the programme

The learning outcomes of the programme are divided into the following areas of competence:

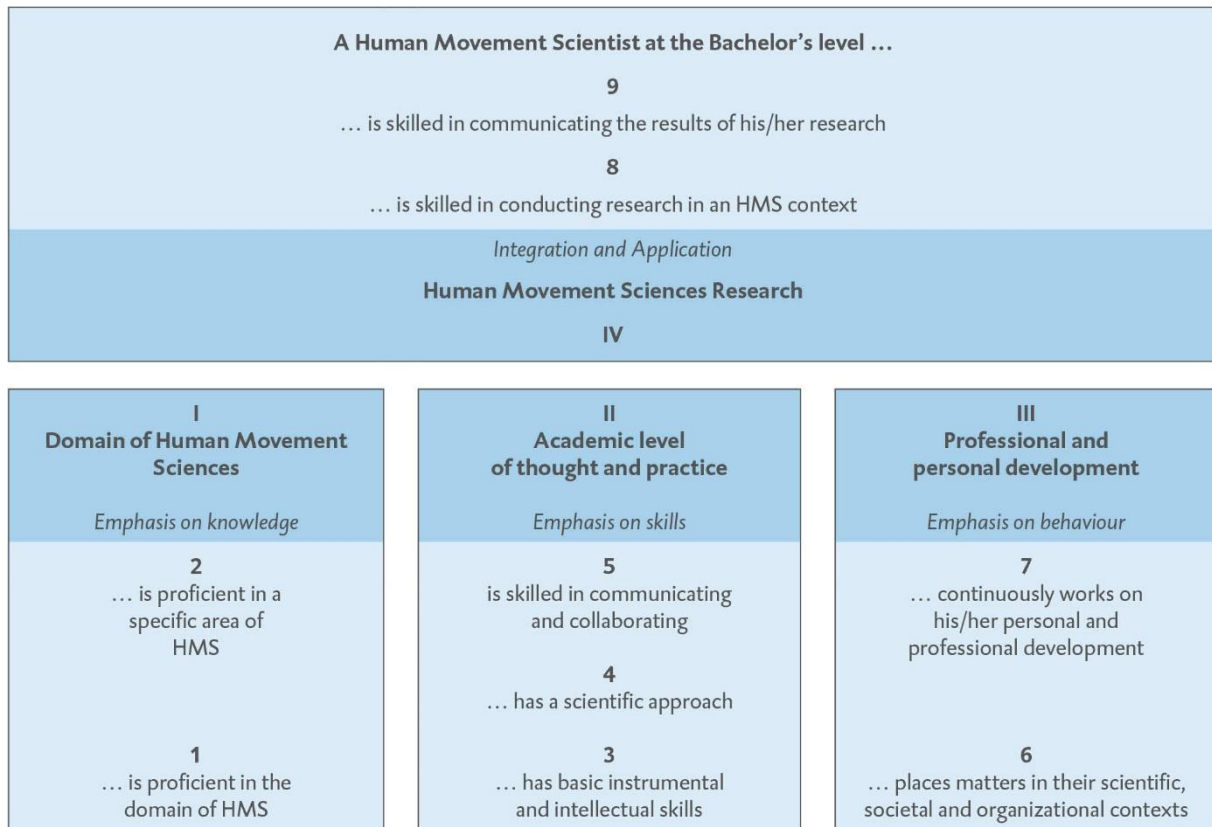
- I. The domain of human movement sciences
- II. Academic level of thought and practice
- III. Professional and personal development
- IV. Human movement sciences research

Within these four areas we identify a total of nine partial qualifications.

A Bachelor of Science graduate in human movement sciences:

1. is proficient in the domain of human movement sciences (I)
2. is proficient in a specific area of human movement sciences research (I)
3. has basic instrumental and intellectual skills (II)
4. has a scientific approach (II)
5. is skilled in communicating and collaborating (II)
6. places matters in their scientific, social and organizational context (III)
7. continuously works on his/her personal and professional development (III)
8. is skilled in conducting research in a human movement science context (IV)
9. is skilled in communicating the results of his/her research (IV).

Structure of the learning outcomes



Structure of the learning outcomes of the Bachelor's degree programme HMS

These competence areas and partial competences apply to both the Bachelor's and the Master's degree programme but are developed at different levels. The specific elements of the learning outcomes are related to the Domain-Specific Frame of Reference (DSFR) that has been developed together with the Faculty of Human Movement Sciences of the VU Amsterdam, the Faculty of Health, Medicine and Life Sciences of Maastricht University and the Nijmegen BSc and MSc Biomedical Sciences programme of Radboud University.

The content of each partial qualification is as follows, with a specification of the associated learning outcomes.

Appendix 4 Overview of the programme

Clusters	B1	B2	B3	IV HMS research				
General biomedical sciences	Anatomy	5EC	Exercise Physiology	5EC	Development of Movement Interventions	5EC		
	General Physiology	5EC	Movement Analysis 1	5EC				
	Biomechanics	5EC	Movement Analysis 2	5EC				
	General & Movement Pathology	5EC						
Biomedical neurosciences	Neurophysiology	5EC	Neuroanatomy 1	5EC	Neuromechanics	5EC		
			Neuroanatomy 2	5EC				
Behavioural sciences	Introduction to Psychology	5EC	Psychology of Movement & Exercise	5EC	Neuropsychology	5EC	Bachelor's Graduation Project	20EC
	Motor Control	5EC	Motor Development & Learning	5EC				
			Perception & action	5EC				
			Theoretical issues in HMS	5EC				
	II Academic level of thought and practice							
Methodological, statistical and research skills	Introduction to Methodology & Statistics	5EC	Statistics 2	5EC	Statistics 3	5EC		
	Mathematics	5EC	Skillslab	5EC				
	Introduction to programming	5EC						
	Statistics 1	5EC						
	III Professional and personal development							
Professional orientation	Introduction into Human Movement Sciences	5EC	Orientation to HMS	3EC	Minor	15EC		
			Bachelor Monitor	2EC				

Appendix 5 Studied documents

1. Self-evaluation report on the Bachelor's and Master's degree programmes in Human Movement Sciences and Sport Sciences 2019
2. Teaching and Examination Regulations + Rules and Regulations Bachelor's degree programme
3. Annual reports:
 - Programme Committee
 - Board of Examiners
 - Assessment plan Bachelor's degree programme HMS
4. Study guides Bachelor's Human Movement Sciences
5. BSc HMS graduation project assessment documents and 15 projects of alumni.
6. Student surveys:
 - Nationale Studenten Enquête 2018 (NSE)
 - Elsevier Beste Studies 2018
 - Keuzegids Hoger Onderwijs 2018
7. List of contacts with the professional field
8. Documents UMCG:
 - UMCG-Quality Assurance Protocol
 - UMCG-Annual Monitor Education
9. Overview lab equipment for students
10. University of Groningen:
 - UG -Strategic plan 2015-2020
 - UG -Assessment policy
 - UG -Manual for Boards of Examiners
 - UG- Quality assurance protocol
11. Teaching and examination regulations + Rules and Regulations Bachelor's degree programme