The Research Master’s in Human Movement Sciences: Sport, Exercise and Health is a two-year programme that can only be taken on a full-time basis. You will learn to apply fundamental scientific insights to relevant questions from clinical and sports practice. The first year is dedicated to preparation for scientific research. By selecting specific courses on human movement sciences and research skills, you will create your own personal track. This will allow you to focus on sport or clinical issues or on the more fundamental research questions in human movement sciences.

Your second year is reserved for a research internship of your own choice, in which you will gain hands-on experience in all aspects of scientific research.

THE PROGRAMME CONSISTS OF:
- Eight obligatory courses
- Optional courses
- Research Internship

LANGUAGE
The Research Master’s is taught entirely in English. This applies to lectures as well as the literature studied and all exams.
Each year a maximum of 30 students are admitted to the Research Master’s programme. Although some of the optional courses involve larger groups, there is still plenty of room for in-depth discussions and lots of personal attention.

With 40 years of experience, the faculty of Human Movement Sciences has produced ground-breaking ideas and innovations, such as the ‘clap skate’ that revolutionized speed skating and the ‘C-mill’, an instrumented treadmill for training and evaluating gait patterns in rehabilitation. We offer a natural environment for inspiring interaction with lecturers and researchers.

The Research Master’s in Human Movement Sciences digs deep to prepare you for top-level scientific research. The programme stretches from molecular biology and tissue engineering to neurosciences and human motor behaviour. You will become acquainted with the latest theoretical developments and learn to apply advanced research methods. Teaching and research go hand in hand, as most lecturers are researchers associated with the MOVE Research Institute.

A full year is reserved for your Research Internship, in which you will apply your newly acquired knowledge and skills in a scientific research project. Because the research topic strongly characterizes your profile, we will help you find a project that fits your interests, either at our department or with another leading institute anywhere in the world.

After completing the Research Master’s, you will be all set to pursue a scientific career, typically starting with a PhD position. However, you will also be well equipped for other research-related positions.
CURRENT RESEARCH TOPICS

POWER TO THE ATHLETES
In many sports, athletes have to make powerful movements. Which neuromuscular factors are involved in power production and how can muscle power production be improved?

STAYING UPRIGHT
Each year, one third of elderly people fall. About 40% of those who fracture their hip after a fall die within one year. Why do older adults fall? And what can we do to prevent them from falling?

BETTER MOVERS ARE BETTER PERCEIVERS
Top volleyball players differ from novice players in how they use visual information. How can we enhance the perceptual skills of athletes?

SPASTIC MUSCLES
In children with spastic cerebral palsy, overactive stretch reflexes result in a limited range of motion. Are spastic muscles stiffer and/or shorter? Is it possible to increase their range of motion?

UNRAVEL THE MYSTERIES OF MOVEMENT
Are you fascinated by human movement and do you want to contribute to our understanding of its secrets? Do you want to advance your insights and skills to provide scientific answers to practical questions? Then the Research Master’s in Human Movement Sciences is the ideal programme for you! Based on the main themes at the MOVE Research Institute, this Research Master’s programme focuses on sport, rehabilitation, and regenerative medicine. Of course you will become thoroughly grounded in these research domains. In addition, you will be trained in state-of-the-art research methods and advanced statistics. You will refine your scientific skills during a one-year research internship.

FINE-TUNE YOUR OWN PROGRAMME
The Research Master’s programme aims at integrating fundamental scientific research with relevant questions from clinical and sports practice. You can fine-tune your own profile by focusing on sport, health, or more basic fundamental aspects of human movement. This not only applies to the courses you select, but also to the topic of your research internship.

USE SCIENCE TO HELP SOCIETY

USE SCIENCE TO HELP SOCIETY

FINE-TUNE YOUR OWN PROGRAMME
The Research Master’s programme aims at integrating fundamental scientific research with relevant questions from clinical and sports practice. You can fine-tune your own profile by focusing on sport, health, or more basic fundamental aspects of human movement. This not only applies to the courses you select, but also to the topic of your research internship.
SEARCHING FOR SCIENTIFIC ANSWERS TO PRACTICAL QUESTIONS

This Research Master’s endows you with the knowledge and skills that are required to address practical issues from a solid scientific background. You can refine your profile by selecting from a variety of specific topics in the domains of sport, health, basic human movement science, and research methods.

SPORT
Your possibilities to specialize in sport science range from courses in exercise and muscle physiology to biomechanics and sport psychology. This includes training in modelling human endurance performance and in biomechanical analyses of technical sports. But you can also focus on the psychological factors that determine sport performance, or on the way in which muscle activation and muscle properties determine maximal neuromuscular output.

HEALTH
With a focus on health, you learn about the restoration of motor function within the context of rehabilitation, as well as the effects of aging on mobility. To appreciate the influences of various aspects of the movement system, these issues are addressed from a number of perspectives, including coordination dynamics, muscle physiology, and clinical exercise physiology. You will gain profound insight into the clinical problems associated with neurological diseases as well as degenerative diseases of the skeletal system, and into new possibilities for treatment.

ADVANCED FUNDAMENTALS
In addition, you may choose to solidify your scientific basis by selecting a less applied pallet of courses. State-of-the-art knowledge about neurosciences, molecular biology, mechanobiology, intermuscular load sharing, or the coupling between perception and action will be your ideal preparation for further specialization in your Research Internship, and in your future scientific career. The same holds for our advanced methodological courses, such as time-series analysis, electromyography, and 3D kinematics.

FURTHER SPECIALIZATIONS

TEACHING IN HIGHER EDUCATION
If you are considering a future academic position, you might want to enhance your teaching skills as well. Each year, the faculty of Human Movement Sciences offers a limited number of students the opportunity to acquire an accreditation for teaching in Higher Education. This additional programme amounts to 24 credits that can be partially incorporated into your Research Master’s programme.
INTERNSHIPS
Extensive experience in high-quality research is indispensable for a scientific career. A full year is therefore reserved for your Research Internship. We aim for first-class projects that result in scientific publications and we will help you find a project that fits your interests, be it in Amsterdam or elsewhere. Below you will find two recent examples.

AVOIDING OBSTACLES
In daily life we often have to adapt our walking pattern, for instance to avoid an obstacle. How well are adolescents with cerebral palsy (CP) able to do so? This internship used an instrumented treadmill to measure gait adaptability. While walking on the treadmill, adolescents with CP had to avoid virtual obstacles that were projected on the treadmill, or to step onto projected targets. Their adaptability was clearly reduced compared to age-matched controls, especially if their degree of spasticity was high. The treadmill set-up proved to provide an effective and safe way of testing gait adaptability. Potentially, it can also be used to train gait-pattern flexibility in the future.

RATS ON THE RUN
Healthy aging and diseases like COPD and chronic heart failure induce atrophy and loss of mitochondria in muscle cells. Can we counteract these degenerative effects by means of exercise training? Generally, sprint training stimulates hypertrophy and improves peak power, whereas endurance training stimulates the biosynthesis of mitochondria, thereby increasing maximum sustainable power. Is it possible to combine these types of training to improve both aspects simultaneously? To research this question, rats were subjected to sprint training, endurance training, or a combination of both. The results showed that in plantaris muscles, but not in the heart and respiratory muscles, the combination training increased both the oxidative capacity and cross-sectional area of muscle fibres. This suggests that it may be possible to improve both endurance and peak power at the same time.

DYMPHY VAN DER WILK, RESEARCH MASTER’S STUDENT

“In my Research Internship in Glasgow (Scotland) I’m working with a VICON motion analysis system to perform gait analysis on people with a lower limb prosthesis. This gives me the opportunity to combine the theory I learned during the first year of the Research Master’s with the application of practical skills in my field of interest: rehabilitation.”
CAREER PROSPECTS
The Research Master’s programme provides an excellent basis for a scientific career. You will be well prepared for starting your PhD studies, but you might also choose another research-related position.

POSTGRADUATE PROGRAMMES
Your programme can be adjusted so that only a few additional courses are required to give you access to the postgraduate programme in Practical Sports Psychology. This programme takes approximately one year (full-time) and leads to accreditation by the ‘Vereniging voor SportPsychologie in Nederland’ as ‘Praktijksportpsycholoog®’. In combination with clinical experience, the Research Master’s degree also provides a good entry level for an American College of Sports Medicine (ACSM) certification as an ‘Exercise Specialist®’. Note that you need to make special arrangements if you aspire to these postgraduate programmes, because the Research Master’s does not offer dedicated tracks in this regard.

WHAT MOVES YOU?
Do you want to make a scientific contribution to the analysis and optimization of sports performance? Would you like to advance the scientific basis for treating motor diseases? Or are you aiming at further developments in the theoretical fundamentals of human movement sciences? Then the Research Master’s in Human Movement Sciences is the ideal programme for you!
ADMISSION REQUIREMENTS

Only a limited number of students can be admitted to this Research Master’s. You can apply if you have a Bachelor’s degree or equivalent in a relevant life science subject (movement sciences, health sciences, medical biology, biomedical technology, medicine, dentistry). You should be highly motivated and have a strong interest in, and aptitude for research, as demonstrated during your Bachelor’s degree programme.

See www.fbw.vu.nl for more information or contact the Admission Board (admission2master.fbw@vu.nl).

LANGUAGE REQUIREMENTS

The Research Master’s programme is taught in English. Non-Dutch students whose first language is not English are required to demonstrate adequate results in an English language proficiency test:

IELTS: 6.5
TOEFL paper-based test: 580
TOEFL computer-based test: 237
TOEFL Internet-based test: 92-93

ESTHER HABERS, RESEARCH MASTER’S GRADUATE

“Thanks to the Research Master’s, I was well prepared for my current job. As a PhD student at the Child Development and Exercise Centre at the Wilhelmina Children’s Hospital in Utrecht, I am currently researching the efficacy and feasibility of an exercise intervention in children with juvenile dermatomyositis. The research experience and critical view gained in the Research Master’s form an excellent basis for my scientific career.”
MORE INFORMATION

WWW.FBW.VU.NL

- Details of the programme
- Information on application and registration
- Practical information for international students

WWW.VU.NL/PROGRAMMES

For general information about studying at VU University Amsterdam

CONTACT

VU University Amsterdam
Faculty of Human Movement Sciences
Van der Boechorststraat 7-9
1081 BT Amsterdam
The Netherlands
T +31 (0)20-598 2000
E admission2master.fbw@vu.nl

PUBLISHING DETAILS

© Department of Marketing and Communication VU 22044_feb2012
Photo: M&C. Cover: HH; ....... invullen
No rights may be derived from the contents of this brochure.

VISIT THE MASTER’S DAY IN MARCH!