

**Admission criteria master programme  
Human Movement Sciences: Sport, Exercise & Health**

**Requirements General Academic Competences**

General academic competencies, such as critical thinking, quantitative literacy, written and oral communication.

**Requirements Theoretical Knowledge**

The following knowledge and understanding at the Bachelor's degree level, obtained at an institution of academic higher education and who can demonstrate to possess the following knowledge, understanding and skills:

1. knowledge of the anatomical nomenclature, knowledge and understanding of the conceptual aspects of the structure and function of muscles, knowledge and understanding of form and function of joints.  
*Example of textbook: Human Anatomy and Physiology, E.N. Marieb (chapters on bones and skeletal tissues, joints, muscles and muscle tissue, the muscular system)*
2. knowledge and understanding of the cardiovascular and respiratory system and the human energy systems and basic knowledge of and skills in the measurement of energy expenditure.  
*Example of textbook: Essentials of Exercise Physiology, W.D. Mc Ardle et al (chapters on human energy transfer during exercise, measurement of human energy expenditure, the pulmonary system and exercise, the cardiovascular system and exercise, training the anaerobic and aerobic energy systems).*
3. knowledge and understanding of muscle physiology: understanding of the anatomy of skeletal muscle, sarcomere function, twitch, tetanus, length-force, force- and power-velocity, and stimulation frequency-force relations, the size principle of motor unit recruitment, rate coding, EMG, electrical stimulation, fibre type related differences in contractile properties, cross-bridge kinetics, excitation contraction coupling, the basic metabolic changes during exercise (changes in ATP and PCr, glycolysis, oxidative phosphorylation, pH).  
*Example of textbook: Skeletal muscle in health and disease, D.A. Jones and J.M. Round (chapters on skeletal muscle structure, the mechanisms of force generation, innervation and electrical activity, histochemistry & contractile properties & motor control).*
4. basic knowledge and understanding of human psychology (principles on learning, perception, memory and emotion).  
*Example of textbook: Psychology: The Science of Mind and Behavior, European edition.*
5. Basic knowledge and understanding of biomechanics (translation, rotation, free body diagrams, kinetic energy, work done by forces and moments, power).

**Requirements Methodological Knowledge**

The following knowledge, understanding and skills at the Bachelor's degree level, obtained at an institution of academic higher education and who can demonstrate to possess the following knowledge, understanding and skills:

1. basic understanding of and skills in statistics (correlation, regression analysis, Student t tests, ANOVA).  
*Example of textbook: Discovering Statistics using SPSS, A. Field.*
2. knowledge and understanding of mathematics (differential, integral and vector calculus, matrix calculations).  
*Example of textbook: Wiskunde in beweging, Th. de Haan*
3. understanding of and skills in processing digital signals in MATLAB  
*Example of textbook: Signalen in beweging, Th. de Haan and online course of TU Delft (<http://www.imc.tue.nl/>)*
4. knowledge and understanding of and skills in common measurement and data processing techniques in human movement sciences (direct and indirect measurement techniques of movement analysis, measuring velocity, acceleration and kinematics, measuring force from force plates and other force transducers, measuring and analyzing electromyography)  
*Example of textbook: Signalen en metingen in de bewegingswetenschappen, G. de Groot & A. Daffertshofer)*