

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

The student has:

- 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 understanding of and skills in statistics (correlation, regression analysis, Student t tests, ANOVA)
Example of textbook: Discovering Statistics using SPSS, A. Field
- 6) knowledge and understanding of mathematics (differential, integral and vector calculus, matrix calculations).
Example of textbook: Wiskunde in beweging, Th. de Haan
- 7) 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/>)
- 8) 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