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Handcycling: a biophysical analysis

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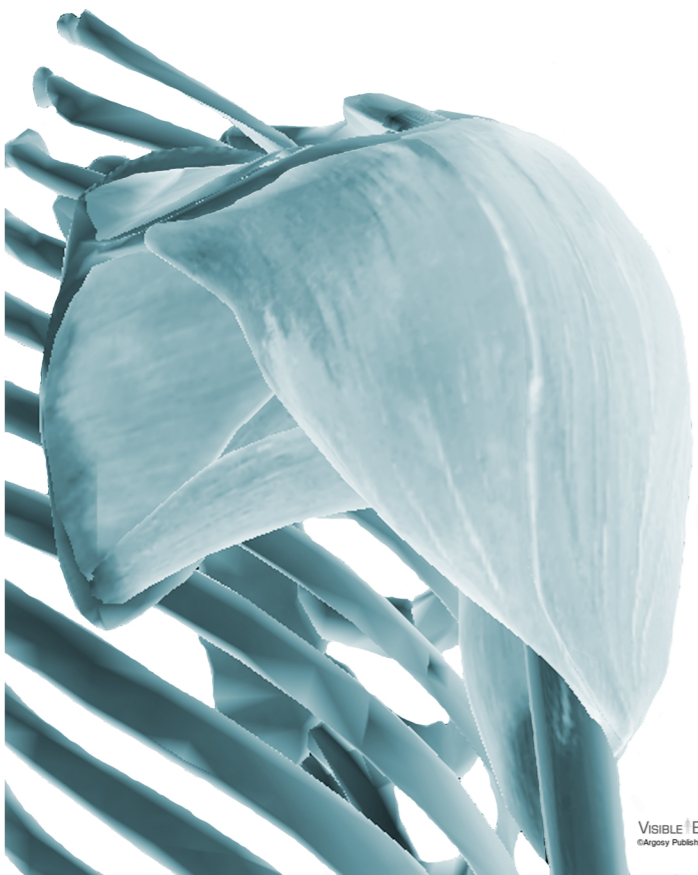
To increase and to maintain health of persons with spinal cord injury upper body physical activity is very important. However, increased physical activity can also have negative consequences related to overload of the upper extremities, which could lead to overuse injuries and pain. Appropriate and regular exercise might be a solution to avoid these injuries. The handrim wheelchair is inefficient and strenuous to use and thus seen as a risk factor for overuse injuries. Therefore, alternative devices such as the handbike should be considered for training or daily outdoor mobility.

In this thesis the physical strain and efficiency of handcycling and its accompanying mechanical load on the shoulder complex is studied. The thesis compares handcycling to manual handrim wheelchair propulsion and reports on different setups of the handbike, all in the light of preventing overuse injuries while allowing for an increased upper body activity.



MOVE TO IMPROVE

VU University Research Institute MOVE is a collaboration between researchers of the Faculty of Human Movement Sciences, VU University Medical Center and the Academic Center for Dentistry Amsterdam. The research carried out within MOVE is related to human movement and health, with an emphasis on prevention and recovery on injury and disorders of the (neuro-)musculoskeletal system, on optimal recovery of tissue and function, and on motor control and coordination. MOVE aims at fundamental, multidisciplinary and translational research, especially in the fields of (oral) regenerative medicine rehabilitation and sports. www.move.vu.nl



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