Physical activity in people with long-term spinal cord injury is important to stay fit and healthy. Due to the lower-limb paralysis, exercise in this population predominantly involves upper-body activities (e.g. handcycling). However, several physiological factors related to spinal cord injury and upper-body exercise, including the relatively small active muscle mass, inactivity of the skeletal muscle pump of the legs and insufficient cardiovascular reflex responses, may reduce desired training effects. Moreover, due to the specificity principle, it is likely that upper-body exercise alone would not notably contribute to the prevention or improvement of several health complications in the lower limbs (e.g. osteoporosis and muscle atrophy). Functional electrical stimulation (FES) can be used to reactivate the paralyzed lower-limb musculature and consequently reduce some of the above-mentioned problems. During hybrid exercise, FES-induced leg exercise is combined with voluntary arm exercise. The potential greater beneficial effects of hybrid exercise over upper-body exercise alone on fitness, physical activity and health requires further investigation. Therefore, the main purpose of this thesis was to examine the effects of hybrid cycling versus hand-cycling on different aspects of fitness, physical activity and health in people with long-term spinal cord injury. The results of this thesis may provide future implications for exercise prescription that preserve long-term functioning in people with spinal cord injury.