Summary
In hospital, clinicians often face older patients in need of complex healthcare and at risk of adverse clinical outcomes. Older patients account for 35–40% of all hospitalizations, of whom an increasing proportion is diagnosed with multimorbidity, using a high number of medications. As a result, clinicians are challenged to adopt a total-body approach rather than focus on a single organ. Hospitalization induces deconditioning at any age, but particularly impacts older patients of whom a third suffers from hospital-associated deconditioning. The deconditioning-induced risk of functional impairments before, during and after hospitalization may be mediated by loss of muscle tissue due to catabolism. In this thesis, we use “muscle status” as an encompassing term describing the condition of muscle. Muscle status is operationalized by muscle mass, muscle strength, and physical performance. Poor muscle status can result in a disease state below clinical cut-off points termed sarcopenia, which is highly prevalent in hospitalized older adults and may lead to adverse outcomes during hospitalization and thereafter. This thesis aimed to obtain insights and raise awareness among clinicians, researchers and the general public about diagnostics, determinants and consequences of poor muscle status in older adults during hospitalization.

Part 1; Diagnostics, aimed to provide insights on public knowledge about sarcopenia, on clinical impact of applying new definitions and on instrumented measurements of muscle status. Knowledge about the terminology, treatment and prevention of sarcopenia was lacking, while the knowledge about the importance of poor muscle status as well as causes and consequences was present in a majority of participants. Changing the definition of sarcopenia in clinical practice resulted in profound differences in prevalence of sarcopenia in eight cohorts of older adults, with differences between males and females. Instrumenting new measurements, e.g. objective daily-life gait speed and instrumented physical performance tests, provided additional information beyond standard physical performance tests. However, the added benefit of the tests remains disputed.

Part 2; Determinants, aimed to identify determinants of poor physical function, muscle mass, strength and performance in various populations of older adults. Our systematic review of the literature showed that elective hospitalization of older patients was associated with a decrease in muscle mass and strength, while this was not the case in older patients being acutely hospitalized. This finding was confirmed by our results of the EMPOWER study. In hospitalized older patient and geriatric outpatients, lower cognitive function and higher inflammatory markers, e.g. C-reactive protein, albumin and erythrocyte sedimentation rate, were associated with lower muscle mass, strength and performance. Body mass index was the only independent predictor for metabolic syndrome in community-dwelling older adults.

Part 3; Consequences, aimed to investigate short-term and long-term consequences of poor muscle mass, strength and performance in hospitalized older patients. Having lower muscle mass at admission was associated with geriatric conditions in males, with falls three months after hospitalization in males, and with mortality three months after hospitalization in males and females. In both genders, lower muscle strength at
admission was associated with geriatric conditions, falls and dependent living three months after hospitalization. Lower muscle performance was associated with dependent living three months after hospitalization.

In conclusion, this thesis obtained insights about the importance of preventing poor muscle status in older adults during hospitalization, and identified a lack of knowledge and appropriate diagnostics in clinical practice. Creating awareness among clinicians and researcher, as well as the general public about determinants and consequences of poor muscle status will improve prevention and treatment. Providing optimal healthcare to acutely or electively admitted patients, with lower cognitive function, with inflammation and with metabolic syndrome include focusing on their muscle status before, during and after hospitalization. Let us appreciate this important organ and get into action to improve muscle status.