Exercise training is recommended as a first-line treatment in the management of fibromyalgia (FM) due to its ability to improve symptoms and function. However, many with FM report limited tolerance to exercise due to exacerbation of pain and fatigue during and following participation of an acute bout of exercise. The purpose of this dissertation was to determine the influence of contraction type on local and systemic experimental pain sensitivity, performance fatigue, and perceived pain and fatigue during exercise and through recovery.

Experimental and perceived pain were measured before and after a single bout of submaximal intermittent contractions (isometric, concentric, and eccentric) of the right elbow flexors in people with and without FM of similar age, sex, body composition, physical activity, and strength. Performance and perceived fatigue were also assessed with each contraction type. Changes in pain and fatigue were evaluated immediately after exercise and through the multiple day recovery following exercise.

People with FM reported a transient increase in local perceived pain and fatigue with resistance exercise and no systemic changes in widespread pain and fatigue. Additionally, there was no change in local or systemic experimental pain sensitivity across all contraction types. Performance fatigability was dependent on contraction type as isometric and concentric contractions lead to greater reductions in local force production in the exercising muscle in FM compared to controls while both groups demonstrated similar changes in local performance fatigability following eccentric exercise. Finally, concentric and isometric contractions lead to greater perceived pain and fatigue locally in the exercising limb during and following exercise compared to eccentric contractions. These findings indicate when prescribing exercise to people with FM, the concurrent management of local pain and fatigue during and following exercise is warranted to improve exercise tolerance. Additionally, findings from this dissertation contrast anecdotal beliefs on limiting eccentric contractions in people with chronic pain.