

# Muscle strength and resistance exercise in women with fibromyalgia - a person-centred approach

Akademisk avhandling

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av

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Avhandlingen baseras på följande delarbeten:

- I. Larsson A, Palstam A, Bjersing J, Löfgren M, Ernberg M, Kosek E, Gerdle B, Mannerkorpi K. Controlled, cross-sectional, multi-center study of physical capacity and associated factors in women with fibromyalgia. *Accepted*
- II. Larsson A<sup>\*</sup>, Palstam A<sup>\*</sup>, Löfgren M, Ernberg M, Bjersing J, Bileviciute-Ljungar I, Gerdle B, Kosek E, Mannerkorpi K. Resistance exercise improves muscle strength, health status and pain intensity in fibromyalgia – a randomized controlled trial. *Arthritis Research & Therapy*. 2015;17:1-15 \* These authors contributed equally
- III. Larsson A, Palstam A, Löfgren M, Ernberg M, Bjersing J, Bileviciute-Ljungar I, Gerdle B, Kosek E, Mannerkorpi K. Pain and fear avoidance partially mediate change in muscle strength during resistance exercise in women with fibromyalgia. *Journal of Rehabilitation Medicine*. 2017; 49:744–750.
- IV. Larsson A, Feldthusen C, Mannerkorpi K. Factors promoting physical activity in women with fibromyalgia-a qualitative interview study. *Manuscript*

**SAHLGRENKA AKADEMIN  
INSTITUTIONEN FÖR NEUROVETENSKAP  
OCH FYSIOLOGI**



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## ABSTRACT

Fibromyalgia (FM) is characterized by generalized pain, impaired physical capacity and activity limitations. Exercise is first choice treatment in FM but there are few studies evaluating the effects of resistance exercise designed to improve muscle strength in FM. Although these studies show promising effects on muscle strength, health status and pain, the paucity of studies implies a low quality of evidence and further studies to investigate the effects of resistance exercise in women with FM are needed.

**The overall aim** of this thesis was to seek deeper knowledge about muscle strength, to examine the effects of person-centred progressive resistance exercise on muscle strength and health, and to explore which factors promote physical activity, in women with FM.

**Methods:** A cross-sectional study investigated the degree of reduced physical capacity in women with FM. The control-group consisted of healthy women matched by age and education (study I). A randomized controlled multi-center study examined the effect of person-centred progressive resistance exercise on muscle strength in women with FM (study II) and explanatory factors for change in muscle strength or predictors for muscle strength (study III). A qualitative interview-study explored promoting factors for physical activity in women with FM (study IV).

**Results:** Women with FM displayed significantly lower physical capacity than healthy women and factors associated to reduced physical capacity were age, disease duration, Body Mass Index (BMI) and activity limitations (study I). Person-centred progressive resistance exercise for 15 weeks resulted in significant improvements regarding muscle strength, health status, aspects of pain and walking ability (study II). The improvement in muscle strength was explained to 32-40 % by baseline fear avoidance, baseline strength, baseline pain and change in pain, age and BMI (study III). Factors experienced to promote physical activity in women with FM were, will to be physically active, adjustment, managing pain and contextual factors (study IV).

**In conclusion** women with FM displayed significantly lower muscle strength and walking ability than healthy women, and this was associated to activity limitations. Engaging in person-centred progressive resistance exercise improved muscle strength and reduced pain and activity limitations. Important factors for change in muscle strength were pain and fear avoidance during and following the exercise intervention. Women with FM had the will to be physically active but were challenged by pain and fatigue and had trouble in finding right level of exercise. This thesis highlights the importance of a person-centred approach when planning exercise programs for women with fibromyalgia.

**Keywords:** physiotherapy, fibromyalgia, pain, muscle strength, resistance exercise, person-centred.