

# Physical activity among patients undergoing bariatric surgery

## Akademisk avhandling

som för avläggande av medicine doktorsexamen  
vid Sahlgrenska Akademin vid Göteborgs universitet  
kommer att offentligen försvaras i Sahlgrens aula, Blå stråket 5,  
Sahlgrenska Universitetssjukhuset/Sahlgrenska, Göteborg,  
torsdagen den 23 maj 2013 kl. 13.00  
av

**Malin Wiklund**

Fakultetsopponent:

**Docent Pernilla Åsenlöf**

Institutionen för Neurovetenskap, Enheten för Sjukgymnastik  
Uppsala Universitet, Uppsala

This thesis is based on the following studies, referred to in the text by their Roman numerals:

- I. Wiklund M, Fagevik Olsén M, Willén C. Physical activity as viewed by adults with severe obesity, awaiting gastric bypass surgery. *Physiother Res Int* 2011;16:179-86.
- II. Wiklund M, Fagevik Olsén M, Olbers T, Willén C. Experiences of physical activity one year after bariatric surgery. *Submitted*.
- III. Wiklund M, Cider Å, Fagevik Olsén M. Accuracy of a pedometer and an accelerometer in women with obesity. *The Open Obesity Journal* 2012;4:11-7.
- IV. Wiklund M, Fagevik Olsén M, Olbers T, Cider Å. Physical fitness and physical activity in Swedish women before and one year after Roux-en-Y Gastric Bypass surgery. *Submitted*.

Permission to reproduce and use content from the above articles was obtained from the publisher



UNIVERSITY OF GOTHENBURG

# Physical activity among patients undergoing bariatric surgery

Malin Wiklund

Institute of Neuroscience and Physiology, University of Gothenburg, Gothenburg, Sweden

## Abstract

The World Health Organization (WHO) recommend that adults should perform  $\geq 150$  minutes of moderate intensity physical activity or  $\geq 75$  minutes of vigorous intensity physical activity or an equivalent combination of them during the week. The WHO further recommends muscle-strengthening activities, to be performed two or more days per week. It is known that physical activity improves health and reduces the incidence of several diseases. Obesity is a major global health problem and currently leads to more deaths worldwide than underweight. Obesity is associated with a sedentary lifestyle, which has a negative effect on health. People with obesity can achieve significant improvements in health by performing the recommended dose of physical activity. Weight loss surgery is now a common treatment of obesity and is associated with greater long-term weight loss than conventional treatment. Today, there is a lack of knowledge about different aspects of physical activity among patients undergoing bariatric surgery.

The overall aim of this thesis was to study different aspects of physical activity among patients before and one year after bariatric surgery.

This thesis includes two qualitative studies (Paper I and II) aiming to describe how patients with obesity experience physical activity before and one year after bariatric surgery. In Paper III, the accuracy of a pedometer (Silva pedometer, model 56013-3) and an accelerometer (Silva Ex3 plus, model 56026), when used by women with obesity, were investigated. In Paper IV, the physical fitness and physical activity level of women before and one year after bariatric surgery was investigated.

Paper I and II: Several obstacles influence the capacity and willingness of patients to be physically active, both before and one year after surgery. The perceived obstacles are often related to excess weight, excess skin or feeling uncomfortable when appearing in public. Both before and one year after bariatric surgery, support is of importance to initiate, find and maintain a suitable physical activity level. Paper III: The accelerometer was found to provide accurate step count readings when it was hung around the neck, while the pedometer was found to be inaccurate as a major problem with undercounting was identified. The accelerometer is therefore suitable for use in studies and for health promotion strategies for obese women.

Paper IV: The physical activity level increased in this group of women one year after bariatric surgery, compared to before surgery. Distance walked in 6 minutes and muscular endurance also increased, and grip strength was preserved. These improvements and the considerable weight loss that these women underwent are important factors in reducing the risk of developing lifestyle-associated diseases and risk of premature death in this group.

Although the physical activity level was found to be increased one year after surgery, some individuals still need and want help in order to increase their physical activity level up to the recommended level. Personalized guidance and training provided by a physiotherapist may lead to an increased understanding of the positive benefits and an increased level of physical activity among the patients, so that they reach the recommended level.

**Keywords:** accelerometer, bariatric surgery, cardiovascular endurance, motor activity, muscular endurance, muscular strength, obesity, pedometer, physiotherapy, physical fitness, physical activity

ISBN: 978-91-628-8678-3

<http://hdl.handle.net/2077/32375>