

# Effects of an eight-week Aquaback training intervention on the quality of life and performance of breast cancer patients in follow-up care

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## 1 Introduction

Breast cancer is the most common cancer in women and the effects of eradication and therapy can affect the physique, the psyche and the social situation of those people concerned (Keller, 2006). This often leads to a restriction of physical performance and a reduction in the quality of life. Many studies have already demonstrated the positive effects of physical activity on the consequences of the disease (Campbell et al., 2005; Herrero et al., 2006; Baumann & Zopf, 2012). Verification has been demonstrated in physical parameters such as aerobic fitness and the body composition (Courneya et al., 2003) as well as in psychological parameters, for example well-being and self-esteem feelings (Baumann & Zopf, 2012). The element water offers good conditions for the training with breast cancer patients because of the special characteristics. Until now, only a few scientific studies on the effects of training in the water on the physical performance and the quality of life in breast cancer patients have been available. The aim of this study was to examine the effects of the newly developed Aquaback-circle, which allows targeted exercise training in combination with persistence elements under the positive properties of the water, on the physical performance and the quality of life in breast cancer patients in the aftercare.

## 2. Method

### 2.1. Studydesign

A group of seven women with postoperative breast cancer received an Aquaback training intervention with two units per week over a period of eight weeks. The 45-minute sessions included exercises to increase strength, power and coordination, which were performed on Aquaback exercise equipment and free practice. Before and after the intervention, studies were carried out on the quality of life, endurance performance and body composition of each patient.

### 2.2. Endurance capability

The endurance performance was determined on the basis of the resting heart frequency and the 2000m walking test. This submaximal endurance test evaluates the endurance capability of the participants on account of the required running time and the individual load hearth frequency. It represents an internationally standardized method for the determination of the physical performance and health condition.

### 2.3. Body composition

The body analysis was performed by means of a bioelectric impedance analysis using the body analyzer scale Omron BF-500. The analysis took place in the pre- and post-test at the

same time, so that day-dependent fluctuations could be excluded. The body analysis provides information on body weight, visceral fat content and skeletal muscle mass.

#### 2.4. Life quality

The questionnaires EORTC QLQ-C30 (Version 3.0) and QLQ-B23 were used to measure the quality of life. The QLQ-C30 is a questionnaire for the assessment of the quality of life of breast cancer patients, developed by the European Organization for Research and Treatment of Cancer (EORTC). Today, in Europe, it is the standard instrument for assessing the quality of life in oncology and is characterized by high reliability, validity and change sensitivity.

#### 2.5. Statistics

The descriptive statistics, as well as the significance check, were carried out using the statistical program SPSS (version 15.0). The Wilcoxon test was used for the dependent sampling. The Wilcoxon test is a non-parametric test and does not require a normal distribution. The significance level was determined at  $\alpha = 0.05$ . An error probability of  $p > 0.05$  thus represents a significant difference.

### 3. Results

#### 3.1. Endurance capability

The run time required for the 2000 meters has decreased significantly after the intervention ( $p = 0.014$ ). The average heart rates during the walking test, as well as the resting heart frequencies, are lower in the posttest compared to the pretest, but do not show any significance. Figure 1 shows the change in the transit times before and after intervention.

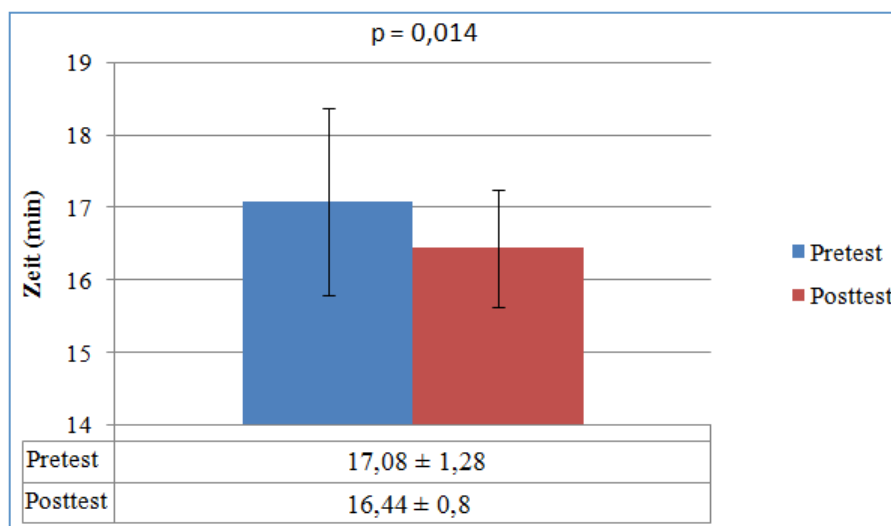


Figure 1: Run time required for 2000 meters has decreased significantly after intervention ( $n = 7$ , mediane with standard deviation,  $p$  after Wilcoxon)

#### 3.2. Life quality

The results of the questionnaire show that in particular the functional assessment of one's own body ( $p < 0.05$ ), as well as the assessment of global health status ( $p = 0.033$ ), show significant improvements. The symptom ratings can only show positive trends.

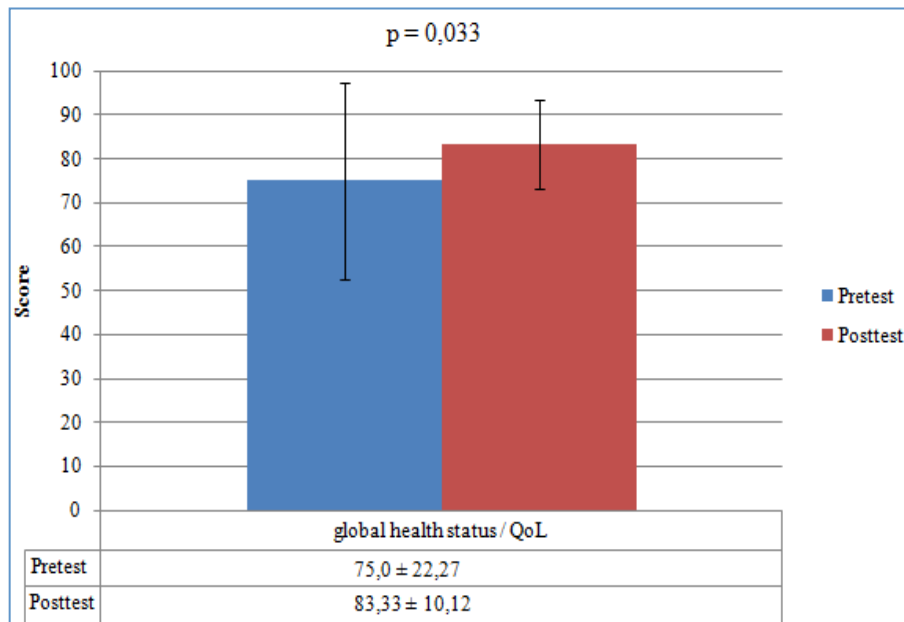


Figure 2: Global health status EORTS QLQ-C30 before and after intervention show a significant improvement

### 3.3. Body composition

Body analysis shows positive changes in body fat content and muscle mass. The body weight and the BMI could be lowered. The results, however, have no significance.

## 4. Discussion

Through the eight-week Aquaback training interventions, the quality of life as well as the endurance ability of the participants could be significantly increased. The results of Roling (2010) confirm the improvement in the quality of life. A training intervention in the water thus seems to have a particularly positive effect on the global quality of life, the emotional

function and the body image. Compared to Ott (2012), an increase in endurance performance could be demonstrated by the intervention in breast cancer patients. The aquaback training seems to have advantages over a conventional aquatherapy because of the device-supported exercises. The results of the quality-of-life questionnaire suggest an increase in strength, which, however, has not been tested by force tests. A significant change in body composition could not be achieved due to the short period of intervention.

## 5. Conclusion

The presented study shows positive effects of the Aquaback therapy on the quality of life and the performance of breast cancer patients in the aftercare. Despite a low training frequency of two units per week, could improve the global quality of life, body image and endurance performance. Various studies show the decrease in the positive effects of physical activity after the intervention (Tidhar & Katz-Leurer, 2009; Roling, 2010). This development was not taken into account in the presented study. Thus, further studies are required which have a higher evidence base and also investigate the long-term effects of an Aquaback training intervention.

## 6. Literature

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