# Exercise for breast cancer patients undergoing neoadjuvant chemotherapy: the BENEFIT study

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| **Ethical review** | Approved WMO |
| **Status** | Recruiting |
| **Health condition type** | Breast neoplasms malignant and unspecified (incl nipple) |
| **Study type** | Interventional |

## Summary

### ID

NL-OMON52607

**Source**
ToetsingOnline

**Brief title**
BENEFIT

### Condition

- Breast neoplasms malignant and unspecified (incl nipple)

**Synonym**
Breast cancer mamma carcinoma

**Research involving**
Human

### Sponsors and support

**Primary sponsor:** Universitair Medisch Centrum Utrecht
**Source(s) of monetary or material Support:** Ministerie van OC&W

## Intervention

**Keyword:** Breast cancer, Exercise, Neoadjuvant chemotherapy, Tumor size

## Outcome measures

### Primary outcome

Primary endpoint:

• % change in tumor size

### Secondary outcome

Secondary endpoints:

• Clinical-pathologic stage (CPS-EG) score

• Pathologic Complete Response (pCR)

• Chemotherapy compliance (reduced, delayed or permanently stopped therapy)

• Quality of life (EORTC QLQ-C30, -CIPN20 and -BR23), overall, functions and symptoms

• Fatigue (EORTC-FA13), total and subscores

• Sleep problems (PSQI)

• Depression and anxiety (PHQ-4)

• Return to work

• Endurance (VO2peak)

• Body weight, hip and waist circumference, and BMI

• Tumor markers, e.g. ki-67 (from clinical routine measures)

• Biomarkers of cancer risk and progression (e.g. angiogeneic factors, inflammatory parameters)

• Hb value

# Study description

### Background summary

Although major progress in breast cancer treatment has been achieved, there is still a need to further improve prognosis. A novel hypothesis is that exercise during chemotherapy may have a beneficial effect on prognosis through boosting the anti-tumoral effect of the cytostatics or enhancing therapy compliance. The neoadjuvant chemotherapy is an excellent setting to investigate the benefits of exercise with regard to chemotherapy efficacy and prognosis, as the effects on the tumor can be immediately explored by effects on the tumor size, pathological complete response (pCR) and the clinical-pathologic stage (CPS-EG) score, which have been shown to be good surrogate endpoints for prognosis. Exercise effects on prognosis might be direct (e.g. via angiogenic effects) or indirect (e.g. by improving therapy compliance). To investigate these hypotheses, we aim to conduct a randomized exercise intervention trial (BENEFIT study).

### Study objective

The major objectives of BENEFIT are (1) to explore the effect of exercise during neoadjuvant chemotherapy on the anti-tumoral chemotherapy effect, tolerability and compliance to chemotherapy, patient-reported outcomes including fatigue, sleep problems, cognitive function, and quality of life; physical fitness, and biomarkers, and (2) to compare the effects of resistance exercise vs. aerobic exercise on the above-mentioned endpoints.

### Study design

The BENEFIT study will be a multicenter randomized controlled trial with 3 arms comparing resistance exercise (Resistance group) vs. aerobic exercise (Aerobic group) vs. a *usual care* control (Control group). The exercise interventions start in parallel with the neoadjuvant chemotherapy (which typically lasts 18 to 24 weeks) and continue until the week before breast surgery (see Figure 1). The control group will be offered an 18-week exercise program 6 weeks after surgery. Measurement time points will be before the start of chemotherapy and before the intervention (T0, baseline), mid-intervention (T1, week 9), at week 19 of intervention or after end of chemotherapy, if later (T2), 6 months after surgery (T3), and 1 year after surgery (T4). Assessments during chemotherapy should be performed in the last third of a cycle to reach better comparability.

### Intervention

Patients in the resistance and aerobic exercise groups start the training in parallel to neoadjuvant chemotherapy and continue until breast surgery.

Patients in the control group receive no training during neoadjuvant chemotherapy, however, will perform 18 weeks training (resistance training) after surgery.

**Study burden and risks**

Burden:
- Study participation takes time. Patients will visit the UMC Utrecht for measurements three times. Each visit will take 2 hours.
Patients in the intervention groups are invited to participate in an exercise program during the course of neoadjuvant chemotherapy. Patients in the control group are offered a 18-week exercise programme after surgery. Burden of travelling to the training facilities will be reduced by offering the exercise program at physiotherapist centers nearby the patients* home.
- Injuries due to exercise can occur, to minimize the risk the intensity of the exercise program will be gradually increased during the study and supervised by a trained physiotherapist or fitness instructor
- During the blood draws, a haematoma can occur after blood sampling.
- Incidental findings can arise with maximal exercise testing, which will be reported to participants.

Benefit:
- We expect that the exercise program will have a beneficial effect on the patients* health status.

# Contacts

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# Trial sites

### Listed location countries

Netherlands

## Eligibility criteria

**Age**
Adults (18-64 years)
Elderly (65 years and older)

### Inclusion criteria

• Unilateral or bilateral primary carcinoma of the breast, confirmed histologically by core biopsy
• Scheduled for neoadjuvant chemotherapy (but not yet started)
• Confirmed hormone receptor (HR) and Her2 status
• Women >= 18 years of age
• Sufficient Dutch language skills
• Willing to be randomly assigned to one of the three study arms
• Signed informed consent

### Exclusion criteria

• Any physical or mental conditions that would hamper the performance of the training programs or the completion of the study procedures
• Engaging in systematic intense exercise training (at least 1h twice per week)

## Study design

### Design

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|---|---|
| Study type: | Interventional |
| Intervention model: | Parallel |
| Allocation: | Randomized controlled trial |
| Masking: | Single blinded (masking used) |
| Control: | Active |
| Primary purpose: | Treatment |

### Recruitment

NL

| | |
|---|---|
| Recruitment status: | Recruiting |
| Start date (anticipated): | 22-10-2021 |
| Enrollment: | 9 |
| Type: | Actual |

## Ethics review

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| Approved WMO Date: | 16-10-2019 |
| Application type: | First submission |
| Review commission: | METC NedMec |
| Approved WMO Date: | 22-11-2019 |
| Application type: | Amendment |
| Review commission: | METC NedMec |
| Approved WMO Date: | 08-07-2022 |
| Application type: | Amendment |
| Review commission: | METC NedMec |

## Study registrations

### Followed up by the following (possibly more current) registration

No registrations found.

### Other (possibly less up-to-date) registrations in this register

No registrations found.

## In other registers

| Register | ID |
| --- | --- |
| ClinicalTrials.gov | NCT02999074 |
| CCMO | NL68545.041.18 |