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# The effects of a supervised exercise intervention on objectively and subjectively assessed physical activity and physical fitness outcomes in patients with metastatic breast cancer

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Purpose
The multinational PREFERABLE-EFFECT study showed beneficial effects of a 9-month supervised exercise program on fatigue and quality of life in patients with metastatic breast cancer (mBC).
Here, we investigate exercise effects on objectively and subjectively assessed physical activity (PA) and on physical fitness outcomes.

Methods
In the PREFERABLE-EFFECT study, 357 patients were randomized to a 9-month supervised exercise intervention (EX=178) or usual care with general PA advice (UC=179). Participants were asked to wear a Fitbit Inspire-HR2 throughout the study and completed the GODIN PA questionnaire at baseline, 3, 6, and 9 months. Raw heart rate (HR) and step data from 5-7 days within the 1-2 weeks surrounding each timepoint, including training days, were extracted and cleaned by removing invalid data, excluding days with <10 hours wear-time, and standardizing sampling rates.
Physical fitness was assessed using daily HR per step (DHRPS), calculated by dividing daily average HR by daily step count (DSC). Intervention effects on DHRPS, DSC and self-reported minutes/week of moderate-to-vigorous PA were analyzed using linear mixed models adjusted for baseline outcome values and stratification factors (i.e., study center and line of treatment).

Results
Fitbit data were available for 129 participants (36.1%; EX=61; UC=68). Sociodemographic characteristics were comparable to the complete study population. Over time, DHRPS was lower and DSC was higher in EX compared to UC. At 9 months, DHRPS was improved in EX compared to UC, albeit not significant (-17.8% [95%CI:0.0-32.5%]), whereas a significant higher DSC was observed for EX (1948 steps [95%CI:698-3197]). Compared to UC, self-reported moderate-to-vigorous PA was significantly increased in EX at 3 months (+46.4 minutes/week [95%CI:9.82–83.0]), but not at subsequent timepoints.

Discussion
A supervised exercise program improves objectively and subjectively assessed PA and DHRPS in patients with mBC. Future analyses will explore intervention effects on time spent in HR-zones and steps-rate categories.

## Keywords

Metastastic breast cancer –Fitbit –Physical actvitiy - RCT

## Conflict of Interest & Ethical Approval

yes

## Abstract submitters declaration

yes

**Author:** BINYAM, David

**Co-authors:** URRUTICHOECHEA, Ander; MAY, Anne; HIENSCH, Anouk; VAN DER WALL, Elsken; SENKUS, Elzbieta; ZOPF, Eva; WISKEMANN, Joachim; FEUERBACHER, Joshua; STEINDORF, Karen; HEINRICH, Lars; STUIVER, Martijn; SCHUMANN, Moritz; BLOCH, Wilhelm; WENGSTRÖM, Yvonne

**Presenter:** BINYAM, David

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