Exercise improves physical and mental side effects of breast cancer treatments

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Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Overall
Cornette et al. 2016	++	++	++	++	++	++	++	++	++	++	++
Dong et al. 2020	++	−−	++	++	−−	−−	++	++	++	+	+
Cornette et al. 2013	++	+	++	−−	+	−−	+	+	−−	−−	−
Travier et al. 2015	++	++	++	++	++	++	++	++	++	++	++
Waart et al. 2015	++	+	++	++	+	++	++	++	++	++	++
Casla et al. 2015	++	++	++	++	++	++	++	++	++	++	++
Schmidt et al. 2015	++	++	++	++	++	++	++	++	++	++	++
Al-Majid et al. 2014	++	−−	++	++	−−	++	++	++	++	++	++
Schmidt et al. 2012	++	++	++	++	−−	++	++	++	++	+	++
Cešeiko et al. 2019	++	+	++	+	+	++	++	++	++	+	++
Cešeiko et al. 2020	++	+	++	++	+	++	++	++	++	++	++
Steindorf et al. 2014	++	++	++	++	++	++	++	++	−−	++	++
Husebø et al. 2014	++	++	++	++	+	++	−−	+	++	+	++
Bolam et al. 2019	++	−−	++	+	++	++	++	++	++	++	++
Schmidt et al. 2015	++	+	++	++	+	++	++	++	++	++	++
An et al. 2020	++	NR	++	++	+	−−	++	++	++	+	++
Courneya et al. 2014	++	++	++	++	++	++	++	++	++	++	++
Wiskemann et al. 2017	++	++	++	++	++	++	+	+	++	++	++

Q1 = Was administered dose or exposure level adequately randomized?

Q2 = Was allocation to study groups adequately concealed?

Q3 = Did selection of study participants result in appropriate comparison groups?

Q4 = Did the study design or analysis account for important confounding and modifying variables?

Q5 = Were the research personnel and human subjects blinded to the study group during the study?

Q6 = Were outcome data complete without attrition or exclusion from analysis?

Q7 = Can we be confident in the exposure characterization?

Q8 = Can we be confident in the outcome assessment?

Q9 = Were all measured outcomes reported?

Q10 = Were there no other potential threats to internal validity?

++ = Definitely low risk

\+ = Probably low risk

− = Probably high risk

−− = Definitely high risk

NR = Not enough information

Risk of bias results for the 18 studies included in the meta-analyses using the OHAT rating tool. Credit: *Scientific Reports* (2022). DOI: 10.1038/s41598-022-07446-3

Exercise helps breast cancer patients with the physical and mental side effects of treatment, a new Loughborough University study has found, and ultimately it may improve disease prognosis.

Led by experts in the School of Sport, Exercise and Health Sciences, the research, published in *Nature Scientific Reports*, looks at the effects of resistance and endurance exercises on patients undergoing post-surgery treatment known as adjuvant therapy.

Adjuvant therapies—such as chemotherapy, radiotherapy, hormone therapy, and forms of targeted therapy—have shown much success in increasing the survival of breast cancer patients.

However, these therapies can have negative side effects that profoundly impact patients' physical and emotional health, decreasing quality of life.

Well-documented side effects include depression, fatigue, and declines in physical fitness (reduced muscular strength and endurance). Such issues can decrease adherence to treatment and, as a result, decrease the efficiency of treatment.

The Loughborough study, led by student Jonathon Mok, looked at the effect of resistance exercises (such as lifting weights) and endurance exercises (such as walking and jogging) on breast cancer patients' physical and mental health.

The researchers pulled together data on 1,830 patients from 18 different peer-reviewed studies and, using statistical analysis techniques, identified overall trends.

They found that combined resistance and endurance exercise interventions are beneficial to cardiorespiratory fitness, depression, muscular endurance, muscular strength, quality of life, and social functioning.

The findings also revealed that the combination of exercises can significantly improve fatigue in breast cancer patients—which is important given this side effect is said to affect between 62% and 85% of patients undergoing treatment.

Other findings include:

- Individually, resistance and endurance interventions improved side effects—though endurance exercise was found to slightly decrease muscular strength
- Resistance interventions elicited higher benefits overall.

The study concludes that, by reducing the negative side effects, these interventions can enhance treatment adherence rates, therefore increasing treatment efficiency and ultimately improving disease prognosis.

Lead author Jonathon hopes the research will "progress literature towards improving the process of adjuvant treatment for breast cancer patients to minimize its detrimental side effects."

He added: "This will help those undergoing aggressive cancer treatments to return to a functional lifestyle post-treatment."

More information: Jonathon Mok et al, The lasting effects of resistance and endurance exercise interventions on breast cancer patient mental wellbeing and physical fitness, *Scientific Reports* (2022). DOI: 10.1038/s41598-022-07446-3

Provided by Loughborough University