



Exercise training during chemotherapy for breast cancer

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Background:

- Breast Cancer is the most common female malignancy in Australia.
- 5 year-survival rate =90%, focus on non-breast cancer related causes of morbidity and mortality.
- Anthracycline-chemotherapy improves survival rates but has adverse effects including reductions in VO₂peak and cardiac function.
- Decline in VO₂ during 3 months of chemotherapy of 10% is equivalent to a decade of ageing

Aim:

To investigate the effects of exercise training for women recently diagnosed with breast cancer undergoing anthracycline chemotherapy

Method:

- 21 women recently diagnosed with breast cancer were split into either usual care or prescribed a three month Accredited Exercise Physiologist led aerobic and resistance training.
- Periodised program was adjusted to the chemotherapy cycles (~21 days) of each participant with a reduction in exercise intensity for the week of chemotherapy
- Key measures including cardiac function, VO₂peak, strength and cancer related fatigue were assessed pre and post intervention.

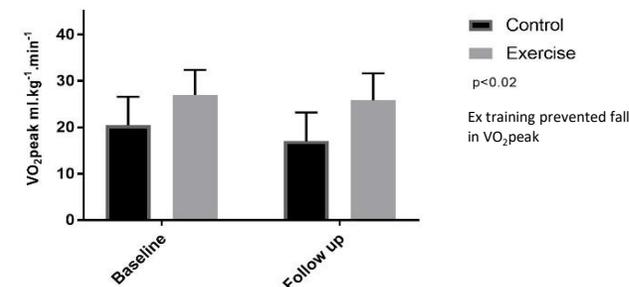
Results:

	Exercise (n=12)	Control (n=9)	p value (at baseline)
Age (y)	46.7 ± 8.6	52.2 ± 8.9	0.11
Height (cm)	163.6 ± 8.4	161.3 ± 7.8	0.54
Body mass (kg)	68 ± 22.5	77.8 ± 18.9	0.31
BMI (kg/m ²)	20.8 ± 6.8	24 ± 5.4	0.25
Cancer diagnosis			
HER2+	1	3	
ER-, PR-, HER2-	8	5	
Other	4	1	
Treatment			
AC	9	6	
AC "Dose dense"	2	2	
FEC-D	1	1	
VO ₂ peak ml.kg ⁻¹ .min ⁻¹	26.9 ± 5.4	20.4 ± 6.1	0.20
% Predicted	89.9% ± 22.5%	71.8% ± 16.5	0.06

Note: Data is mean ± SD Abbreviations: HER2+ (Hormone estrogen receptor 2 positive), ER-, PR-, HER2- (estrogen receptor negative, progesterone receptor negative and hormone estrogen receptor 2 - triple negative), AC (anthracycline cyclophosphamide, 21-day cycle), AC "Dose dense" (anthracycline cyclophosphamide, 14-day cycle), FEC-D (5-fluorouracil-epirubicin-cyclophosphamide)

Exercise (n=11)	Pre	Post	p value
Leg press (kg)	126.9 ± 27.8	161 ± 26.3	0.0001**
Seated row (kg)	40.3 ± 20.3	49.3 ± 26.4	0.13
Chest press (kg)	27.4 ± 12.7	34.8 ± 14.6	0.0025*

Fig 1 Changes in VO₂peak during breast cancer chemotherapy with and without exercise training



Conclusion & Significance of the findings to allied health:

An Exercise Physiologist led aerobic and resistance training program was well tolerated in women recently diagnosed with breast cancer. The program minimised the loss in VO₂peak and improved strength. An exercise program during chemotherapy should be considered in the oncology setting.

