Do Taxane Based Chemotherapies Impair Improvements in VO\textsubscript{2} in Female Cancer Survivors?

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Taxane-Based chemotherapies result in serious physiological side effects in patients, including impaired muscle metabolism, myocyte damage, impaired balance, pain, fatigue, and sensations of numbness in the extremities. As a result, it has been suggested that individuals who have received taxane-based chemotherapies do not obtain the same benefits from exercise as those who receive other forms of cancer treatment. **PURPOSE:** To determine if female cancer patients who underwent taxane- based chemotherapies benefited from exercise as compared to those who received non-taxane based treatments. **METHODS:** Retrospectively, 101 females (57.88 \pm 11.59), with female cancers (Breast (79), Ovarian (10), Endometrial (4), Uterine (2), and Cervical (1)) enrolled in a cancer rehabilitation program underwent a variety of fitness assessments, but only measures of VO\textsubscript{2} are reported here. Each subject was provided an individualized mixed home (2 days) and facility based (1 day) 12 week exercise intervention. **RESULTS:** A strong positive correlation between VO\textsubscript{2}1-VO\textsubscript{2}2 (r=0.802, p=0.000), a low to moderate negative correlation between VO\textsubscript{2}1+age (r= -0.365 p=0.000), a low negative correlation between VO\textsubscript{2}2+age (r= -0.215 p=0.036) were found. A significant change from VO\textsubscript{2}1 to VO\textsubscript{2}2 (t=-5.372 p=0.000) was determined. While there were no differences between Taxane and Non-Taxane measures of VO\textsubscript{2}, there was a trend in percent change in VO\textsubscript{2} (F=3.306 p=0.073). There were also no differences in any measure of VO\textsubscript{2} between taxane and non-taxane treatments by cancer type. Regression analysis indicated only age (t=2.775 p=0.007) predicted percent change in VO\textsubscript{2} values and VO\textsubscript{2} 1 values (t=-3.606, p=0.001), while age and cancer type predicted VO\textsubscript{2}2 values (t=-2.117, p=0.037; t=-2.217, p=0.029 respectively). **CONCLUSION:** The data does not support the hypothesis that taxane based chemotherapies result in lower VO\textsubscript{2} values, as both age and cancer type had greater overall effects on VO\textsubscript{2}. Additionally, significant improvements in VO\textsubscript{2} after the 12-week exercise intervention, regardless of treatment type, age, or cancer type supports the effectiveness of exercise-based cancer rehabilitation program to improve VO\textsubscript{2} in a female cancer population.