Following Through: Home-Based Exercise Programs and Exercise Adherence in Pancreatic Cancer Patients During Pre-Operative Chemotherapy

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Background

- Pancreatic cancer treatment is associated with significant decline in functional ability and QOL. Increasing physical activity (PA) and may offset these declines[1]

- As few as 24% of pancreatic cancer survivors meet both aerobic and strengthening recommendations established by the ACSM. As many as 39% of pancreatic cancer survivors report meeting neither strength nor aerobic exercise recommendations[2]

- High self-efficacy has been positively correlated with exercise behaviors in older adults[3], while low levels of self-efficacy were associated with low levels of PA in lung and gastrointestinal cancer survivors[4]

- This study investigates changes in self-reported exercise and exercise self-efficacy associated with a home-based exercise program for pancreatic cancer survivors undergoing preoperative chemotherapy.

Methods

- Participants were randomized to receive general recommendation to exercise (Arm A) vs. a formal, home based exercise program (Arm B) including training, equipment, and follow-up

- Data was collected using baseline and pre-operative surveys. Inclusion in this analysis was contingent upon survey completion at baseline and pre-op

- Self-reported aerobic activity was measured on a modified Godin scale
- Exercise and barrier self-efficacy were measured using validated surveys

- Paired t-tests identified significant differences between baseline and pre-op survey scores
- ANOVAs were used to quantify associations between study arm and aerobic, strength, ESE, and BSE scores
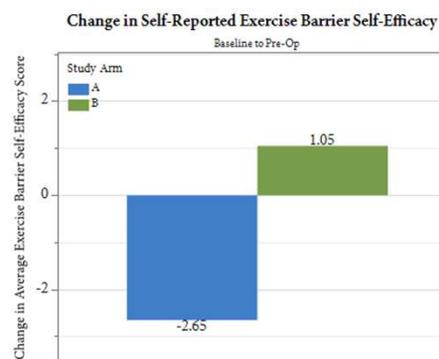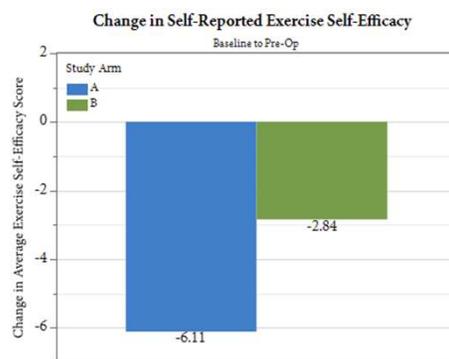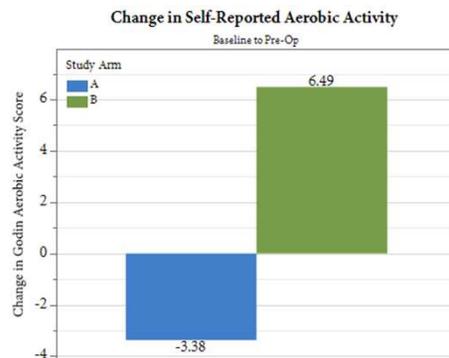
Participant Characteristics

			Arm A	Arm B	Overall
Sex	n(%)	Female	23 (50.0)	15 (32.6)	38
		Male	23 (50.0)	31 (67.4)	54
			46	46	92
Age at Enrollment (years)	Mean ± SD		65 ± 7	66 ± 8	-

Paired t Differences

	Arm A					Arm B				
	M	**SD**	**df**	**t**	**Sig.**	**M**	**SD**	**df**	**t**	**Sig.**
Aerobic Exercise	-3.375	35.918	39	-.594	.556	6.488	25.748	42	1.652	.106
Strengthening Exercise	0.304	2.269	45	.910	.368	**1.761**	**1.852**	**45**	**6.448**	**.000**
Exercise Self-Efficacy	-6.108	23.189	36	-1.602	.118	-2.842	28.335	37	-0.618	.540
Barrier Self-Efficacy	-2.650	11.452	39	-1.463	.151	-1.048	11.584	41	0.586	.561

Bolded text reflects statistical significance

Changes in Selected Measures

Change in Self-Reported Aerobic Activity
Baseline to Pre-Op

Change in Self-Reported Strength Training
Baseline to Pre-Op

Change in Self-Reported Exercise Self-Efficacy
Baseline to Pre-Op

Change in Self-Reported Exercise Barrier Self-Efficacy
Baseline to Pre-Op

Results

- Paired t-test revealed significant mean difference in Arm B strength training frequency from baseline (M=.41, SD=1.087) to pre-op (M=2.17, SD=1.854); t(45) = -6.448, p <.001. There were no significant mean differences in Godin score, ESE, or BSE among Arm B participants, and no significant mean difference overall in Arm A participants

- One-way ANOVA found significant effects of study arm on strength training frequency [F(1,80)=11.919, p=.001, η²=.130]. A formal, home-based exercise program increased strength training frequency when compared to usual care

- Among all participants, ESE was a strong predictor of Godin score (R2=.205, F(1,76) = 19.599, p<.001) and strength training (R2=.136, F(1,83) = 13.105, p=.001). BSE was also a strong predictor of both Godin score (R2= .359, F(1,78) = 43.703, p<.001) and strength training (R2=.164, F(1,87)=17.114, p<.001)

Conclusions/Implications

- This study aims to determine whether home-based aerobic and resistance exercise programs could increase physical activity among individuals undergoing pancreatic cancer treatment. Moreover, we determined self-efficacy was a highly significant predictor of self-reported exercise

- While no significant associations were detected between study arm and aerobic exercise, exercise self-efficacy, or barrier self-efficacy scores, differences in group means were generally in the hypothesized directions.

- This study was limited by relatively small (n=92) sample size. Larger sample size may reveal statistically significant improvement in aerobic activity levels, exercise self-efficacy, and barrier self-efficacy.

- Identifying key intermediates for behavioral change in these unique populations will help future exercise interventions utilize targeted behavioral modification strategies to address the specific needs of this group

Acknowledgements

References

1) Ngo-Huang & Parker et al. *Integrative Cancer Therapies.* 2019, *18.*
2) Parker et al. *Annals of Surgical Oncology.* 2020, *28,* 2299-2309
3) Neupert et al. *Journal of Aging and Physical Activity.* 2009, *17,* 1-16
4) Wasley et al. *Psycho-Oncology.* 2017, *27,* 458-464

PH3 I think you can finish this comment with what you described in the abstract re: association between SE and self-reported exercise.
Parker,Nathan H, 7/29/2021

CM1 I ran a linear regression using ESE/BSE as a predictor for both strength training and Godin score in both groups, really high significance! Definitely supports the importance of self efficacy. Added it here
Cotto,Alicia Marie, 7/30/2021