Improved Rates of Pain Catastrophizing, Physical Activity, and Physiological Outcomes from Participating in a University Wellness Program

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Introduction

- Pain catastrophizing (PC) is a negative cognitive pattern that has been reliably linked to various pain-related outcomes, but the role of PC in exercise engagement among healthy participants is unclear.
- Physical activity involves pain from injury, muscle soreness, or exertion itself, and such pain can lead to reduced physical activity (Dannecker, Price, O'Connor, & Robinson, 2008).
- Cognitive and emotional reactions , such as whether people view exercise as a challenge rather than a threat, can influence exercise engagement (Kress & Statler, 2007)
- Healthy, sedentary individuals rate painful stimuli in general as more intense than athletes and have a lower pain tolerance (Sullivan et al., 2000).
- Individuals who are overweight/obese are more likely to report skeletal and muscle aches and pains (Mattsson, Larsson, & Rossner, 1997
- PC can also lead even athletes to reduce their engagement in physical activity (Deroche et al., 2011)

This poster reports outcomes of a university-sponsored wellness program designed to aid sedentary individuals to be more active. It is anticipated that physical activity will increase, PC will decrease, and other health indicators will improve for program completers.

Method

Participants:

- 106 adults participating in a university employee wellness program with the goal of training to complete a 5k walk/run
- 80% female; aged 43.5 years (*SD* = 11.65)
- 80%white, 12% black, 4% Asian or PI, and 3% Hispanic

Measures:

- Physical Health Measures — Height, weight, body mass index (BMI), hip circumference, and waist circumference
- Physical Activity — Days per weeks and minutes per session each for three physical activities: **aerobic exercise, stretching, and strength training**
- Pain Catastrophizing Scale (PCS) — a widely used, validated measure of dysfunction thinking about pain (range: 0–52). Higher scores = greater negative thinking.
- Individual items assessed self-rated General Health (0–4), Job Performance (0–10), Concentration (0–3), and Sleep (3 items with scales from 0–5).

Table 1. Descriptive statistics at 12 months for total sample (*N* = 106).

Variable	T1 *M*	T1 *SD*	T2 *M*	T2 *SD*	*F*	*df*	*p*	η_p^2
Cognitive Measures								
Pain Catastrophizing	7.47	6.69	3.29	4.10	49.75	1, 85	**.000**	.369
Physical Health Measures								
Height	65.25	3.00	–	–	–	–	–	–
Weight	171.01	42.58	171.00	40.68	.000	1, 74	.984	.000
Body Mass Index (BMI)	27.97	6.45	28.30	6.52	1.40	1, 71	.241	.019
Hip Circumference	40.96	5.34	40.86	5.35	.033	1, 67	.856	.000
Waist Circumference	35.65	6.10	34.63	5.63	11.64	1, 67	**.001**	.148
Physical Activity Measures								
Aerobic Activity (days)	2.64	1.81	3.37	1.55	14.52	1, 77	**.000**	.159
Aerobic Activity (mins)	28.94	24.44	38.47	22.75	6.91	1, 76	**.010**	.083
Strength Training (days)	0.90	1.47	1.10	1.32	3.11	1, 77	.082	.039
Strength Training (mins)	11.30	17.08	15.01	22.40	3.59	1, 76	.062	.045
Stretching (days)	1.53	2.07	2.66	1.89	29.20	1, 77	**.000**	.275
Stretching (mins)	8.05	16.99	12.32	17.74	3.59	1, 76	.062	.045
Additional Items								
General Health	2.17	0.69	1.99	1.01	2.98	1, 85	.088	.034
Job Performance	7.81	1.52	7.68	1.77	0.52	1, 84	.472	.006
Concentration	0.52	0.65	0.39	0.58	2.74	1, 84	.101	.032
Sleep Duration	1.24	1.00	0.91	0.90	23.41	1, 85	**.000**	.216
Sleep Restlessness	1.47	1.20	1.03	1.02	18.02	1, 85	**.000**	.175
Sleep Latency	1.06	.99	0.74	0.91	13.72	1, 85	**.000**	.139
Sleep Awakenings	1.19	1.28	0.95	1.11	6.25	1, 84	**.014**	.069

Results

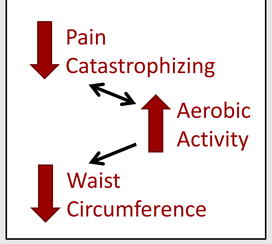
- Descriptives: Participants generally reported low pain catastrophizing high BMIs (>25 = Overweight), and unhealthy body shapes.
- Changes Over Program: Participants achieved some modest increases in physical activity, specifically aerobic activity (~10 minutes longer per session and about 2 extra sessions over 3 weeks) and stretching (~1 extra day every 3 weeks). This increased activity did NOT result in lower weight, but it did produce a significant decrease in waist circumference (~1 inch smaller).
- Other Changes: Changes in activity and health corresponded to a small but significant decrease in pain catastrophizing. The increased physical activity appeared to positively impact sleep, as a number of measures of self-rated sleep showed improvement.

Discussion

- Although results were smaller than anticipated, a noteworthy pattern did emerge (see Figure 1). Small changes in physical activity, co-occurring with a reduction in pain catastrophizing, produced a modest change in body composition such that weight did not change but weight around the midsection was reduced.
- Given the role of waist circumference as an indicator of negative health outcomes, this result emphasizes the importance of educating participants not to attend only to weight, but also to waist circumference.
- LIMITATIONS: Only a small portion of all participants were willing to participate in this study. The program is only 9 weeks long, so it may be an insufficient amount of time to detect more substantive changes.
- STRENGTHS: Results suggest that pain catastrophizing changed in conjunction with increases in physical activity. Future research should identify whether decreases in PC come before increases in activity, or whether exposure to physical activity decreases the negative cognitions related to pain catastrophizing.

CONCLUSION: Results provide evidence to support the implementation of wellness programs as data indicate small improvements in physical activity and concurrent changes to participant body composition.

Figure 1. Body change.



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