

**SECONDARY ANALYSIS  
OF AN ACT FOR  
PHYSICAL ACTIVITY  
INTERVENTION TO  
EXAMINE THE IMPACT  
ON MENTAL HEALTH  
AND QUALITY OF LIFE**

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# BACKGROUND: PROBLEM

## Obesity

- Global epidemic and significant public health issue – ever increasing problem despite intervention development
- Negative health, economic, and social effects
- Quality of life is affected

## Mental Health

- Increasing in prevalence and morbidity over 30+ years despite intervention development
- Anxiety and depression = bidirectional risk relationship with obesity □ benefit to addressing both

## Physical Activity (PA)

- Critical behavioral determinant of health
- Key factor in weight maintenance – also to a lesser extent in weight loss
- Shown to affect mental health

## Interventions Targeting PA

- Lifestyle interventions are costly and time-consuming to administer – most inadequately target PA
- Most interventions lack theoretical basis or psychological constructs – may limit effectiveness of long-term behavior change
- ACT is well-suited to improve PA habitually because 1) ACT targets a robust mechanism, value-based autonomous motivation, and 2) ACT can be delivered and can be effective in low-intensity formats

# BACKGROUND

Examining a single-arm trial of a brief ACT intervention designed to foster moderate to vigorous intensity physical activity (MVPA) in insufficiently active overweight and obese participants

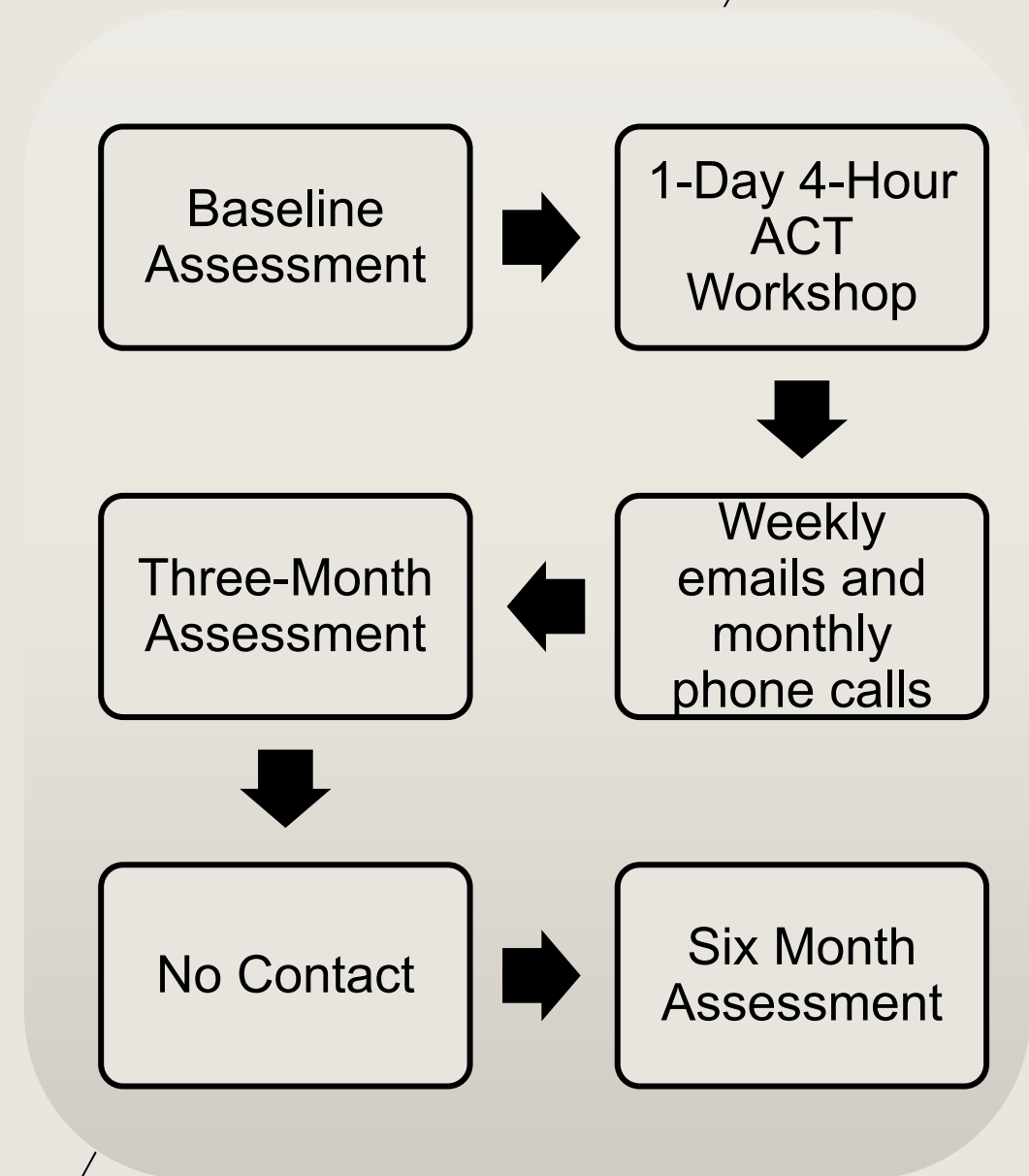
Brevity of intervention encourages wide dissemination and as a stand-alone or add-on component of a larger lifestyle intervention

Targeted value-based autonomous motivation – strong predictor of sustained behavior change

Hypothesized changes in mental health and quality of life variables in addition to changes in PA

# METHODS

- **Procedure:** Single arm clinical trial with three assessment points
- **Participants:**  $n=41$  insufficiently active adults, with BMI of 25-45
- **Measures:** *Physical Activity (PA)*: Antigraph accelerometer for 7 days at assessment point; *Quality of life (QOL)*: PROMIS29 V2.1
- **Intervention:** 1-day, 4 hour, groups of 4-8. Targeted changes in value-based autonomous motivation & psychological acceptance related to MVPA
  - **Components:**
    - Personal value clarification & how MVPA can be value consistent
    - Overcome barriers to MVPA through acceptance-based skills
    - PA education
    - MVPA goal setting



# RESULTS FROM ORIGINAL STUDY

Intervention was feasible and rated as highly acceptable by participants

Significant changes in bouts and total MVPA with medium to large effect sizes – in completers and through intent-to-treat models

Increases maintained through no-contact

Completer MVPA results: (Target was >21 min/day)

		<b>Baseline</b>	<b>Three Months</b>	<b>p</b>	<b>d</b>	<b>Six Months</b>	<b>p</b>	<b>d</b>
n=27	Bouted Daily MVPA	6.090	17.130	0.001	0.780	13.960	0.010	0.620
n=27	Total Daily MVPA	17.460	28.700	0.003	0.710	26.320	0.045	0.500

Significant increases in relative autonomy, identified motivation, and acceptance

# PRESENT STUDY

**This study:** Assessed the impact of this low dose and highly disseminable intervention on Mental Health and Quality of Life by examining:

- Patient-Reported Outcomes Measurement Information System-29 (PROMIS)
  1. Anxiety
  2. Depression
  3. Fatigue
  4. Pain Intensity
  5. Pain Interference

## **Methods:**

- Repeated measures ANOVAS with Bonferroni corrections
- Post-hoc repeated measures ANOVAS compared mental health and quality of life in intervention responders (those who increased exercise) to those who did not
- Calculated effect sizes (Cohen's d) for all variables examined

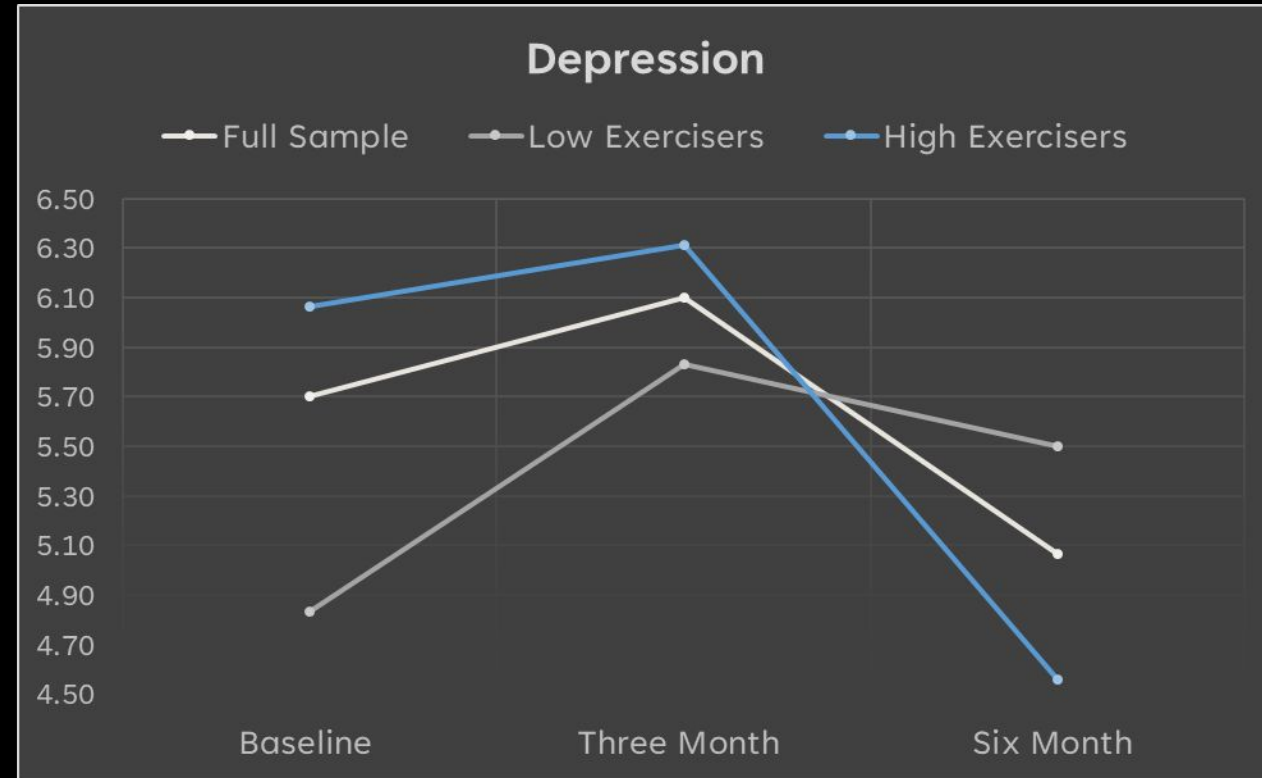
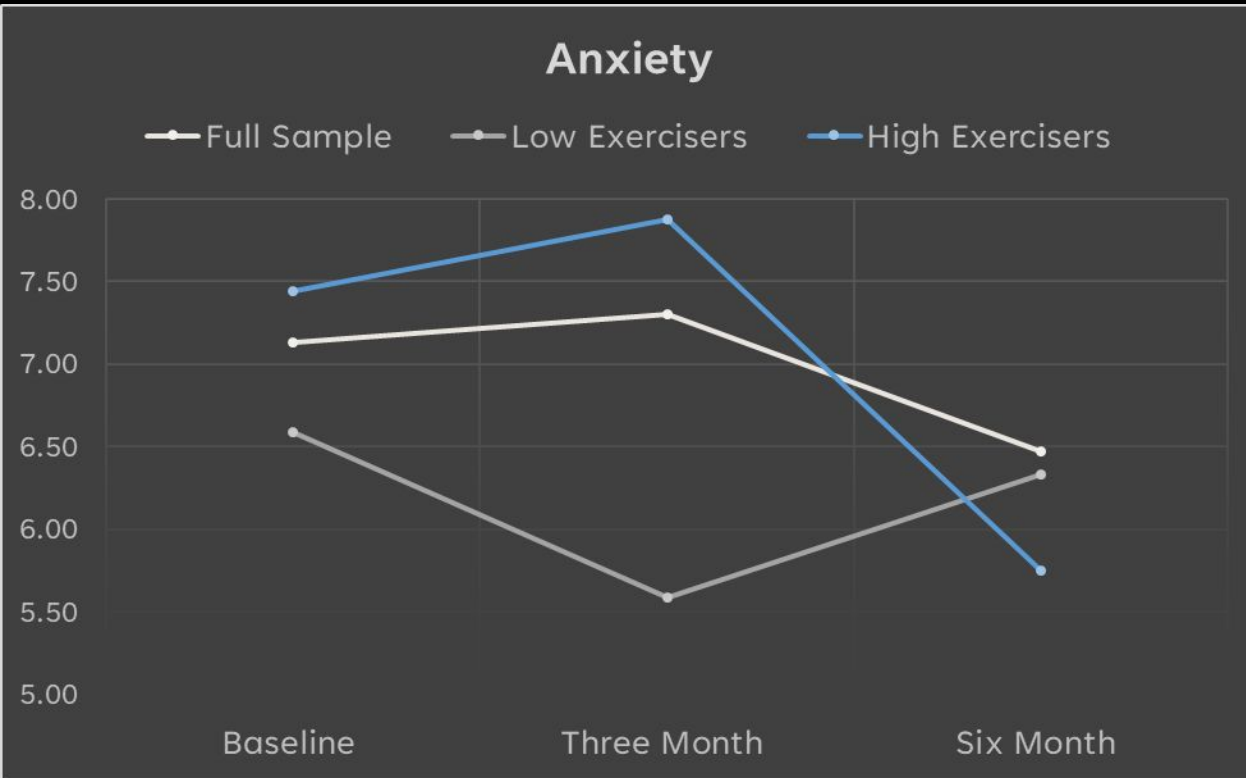
# MENTAL HEALTH

		Baseline		Three Month			Six Month		
		Mean	SD	Mean	SD	d	Mean	SD	D
<b>Anxiety</b>	Full Sample	7.13	2.90	7.30	4.21	0.05	6.47	3.08	0.22
	Low Exercisers	6.58	2.39	5.58	2.15	0.44	6.33	2.84	0.10
	High Exercisers	7.44	3.39	7.88	4.87	0.10	5.75	2.49	0.57
<b>Depression</b>	Full Sample	5.70	2.67	6.10	4.08	0.12	5.07	2.02	0.27
	Low Exercisers	4.83	1.59	5.83	4.11	0.32	5.50	2.71	0.30
	High Exercisers	6.06	2.89	6.31	4.38	0.07	4.56	1.21	0.68

Full Sample: At three-months, Anxiety and Depression were minimally affected. At six-months, small effect sizes were observed for both Anxiety (.22) and Depression (.27).

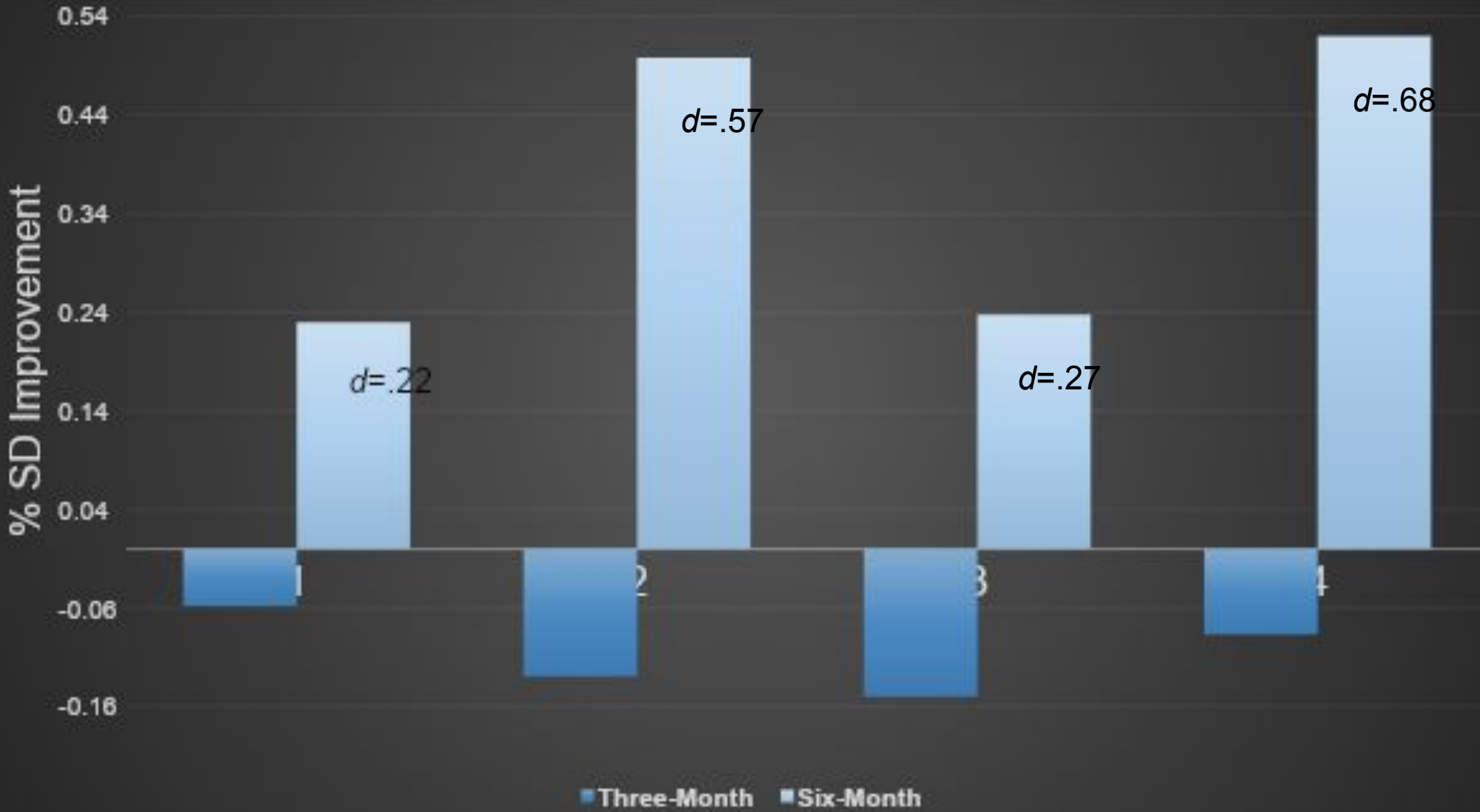
Treatment Responders: At three months, similarly, variables were minimally affected. At six months, medium to large effect sizes were observed for Anxiety (.57) and Depression (.68).

# MENTAL HEALTH





# MENTAL HEALTH



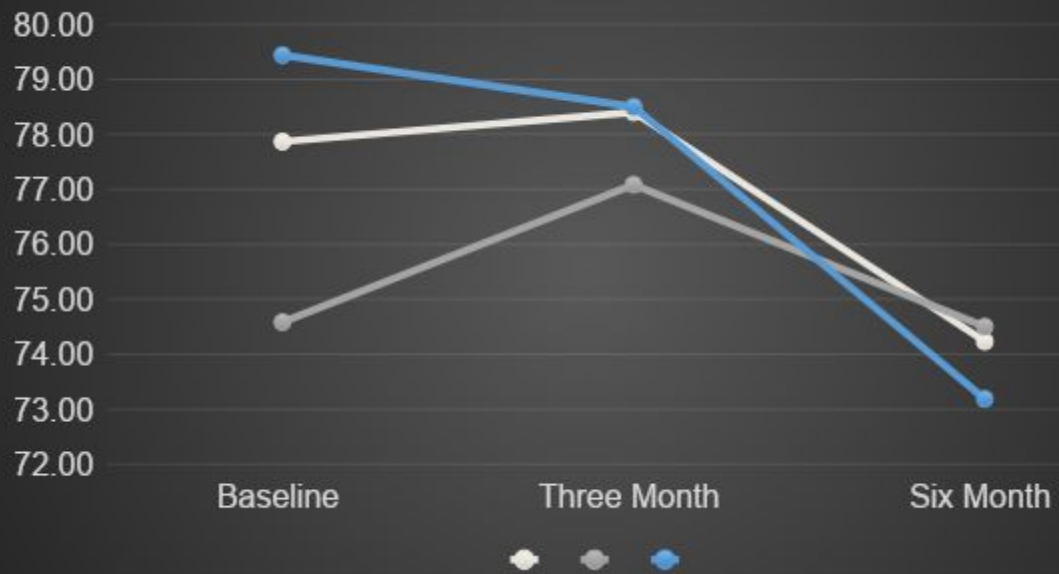
# QUALITY OF LIFE

		Baseline		Three Month			Six Month		
		Mean	SD	Mean	SD	d	Mean	SD	d
<b>PROMIS Total</b>	Full Sample	77.87	9.85	78.40	12.17	0.05	74.23	7.32	0.42
	Low Exercisers	74.58	5.21	77.08	12.26	0.27	74.50	7.96	0.01
	High Exercisers	79.44	10.93	78.50	12.90	0.08	73.19	7.05	0.68
<b>Fatigue</b>	Full Sample	9.07	3.96	8.60	4.15	0.11	7.87	2.93	0.34
	Low Exercisers	7.58	4.19	8.42	5.12	0.18	6.92	3.29	0.18
	High Exercisers	9.88	3.54	8.38	3.34	0.44	8.38	2.66	0.48
<b>Pain Intensity</b>	Full Sample	2.33	2.09	2.30	2.35	0.01	1.70	1.95	0.31
	Low Exercisers	1.83	1.90	2.58	3.06	0.29	1.75	2.22	0.04
	High Exercisers	2.65	2.13	1.94	1.84	0.36	1.50	1.71	0.60
<b>Pain Interference</b>	Full Sample	6.20	3.60	6.10	3.28	0.03	5.20	2.20	0.33
	Low Exercisers	5.50	2.28	6.67	3.77	0.37	5.08	2.07	0.19
	High Exercisers	6.25	3.77	5.69	3.07	0.16	5.13	2.28	0.36

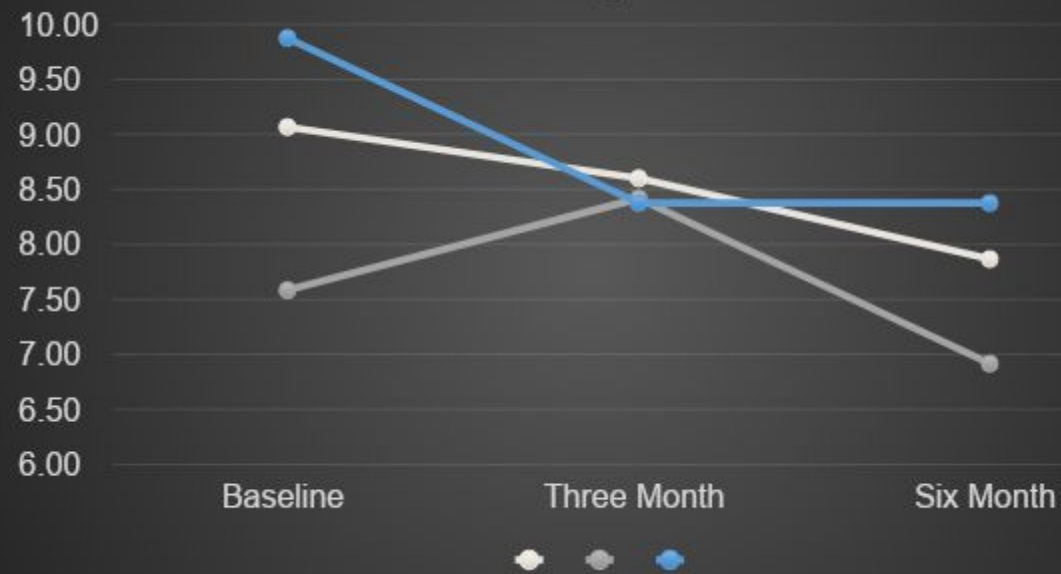
Full Sample: Negligible changes at three months. At six months, small to medium effect sizes in PROMIS Total (.42), Fatigue (.34), Pain Intensity (.31), and Pain Interference (.33).

Treatment Responders: Small to medium effect sizes in Fatigue and Pain Intensity at three months. At six months, small to medium effect sizes in PROMIS Total (.68), Fatigue (.48), Pain Intensity (.60), and Pain Interference (.36).

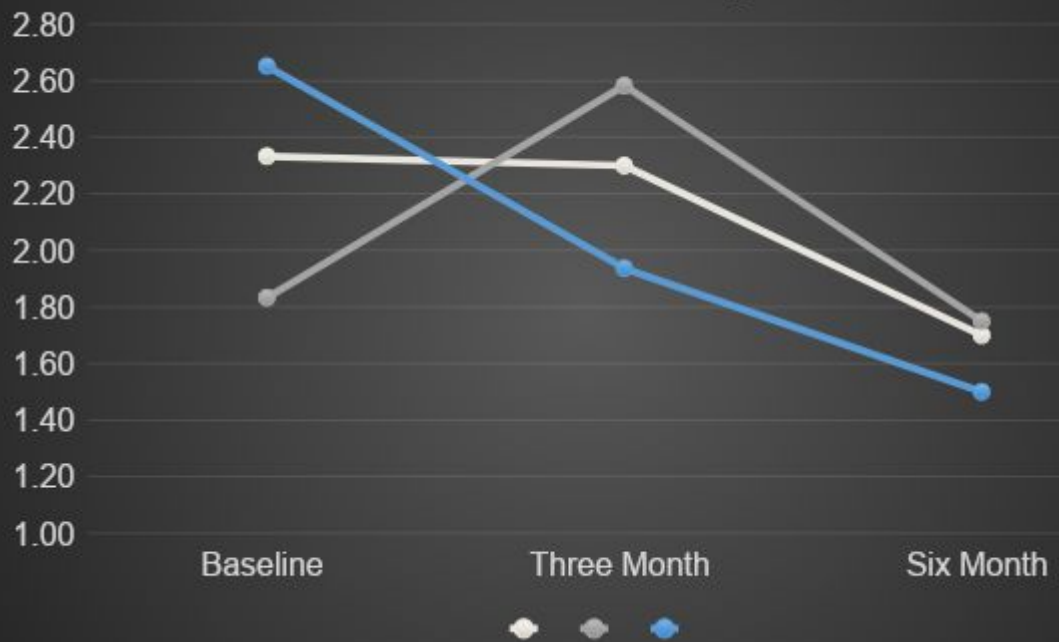
### PROMIS Total



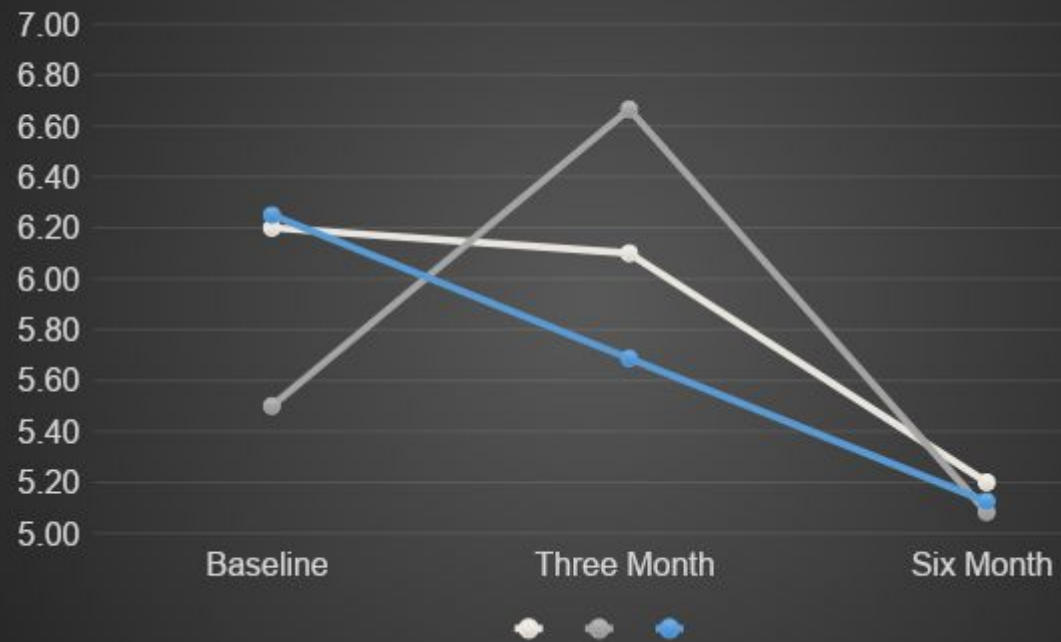
### Fatigue



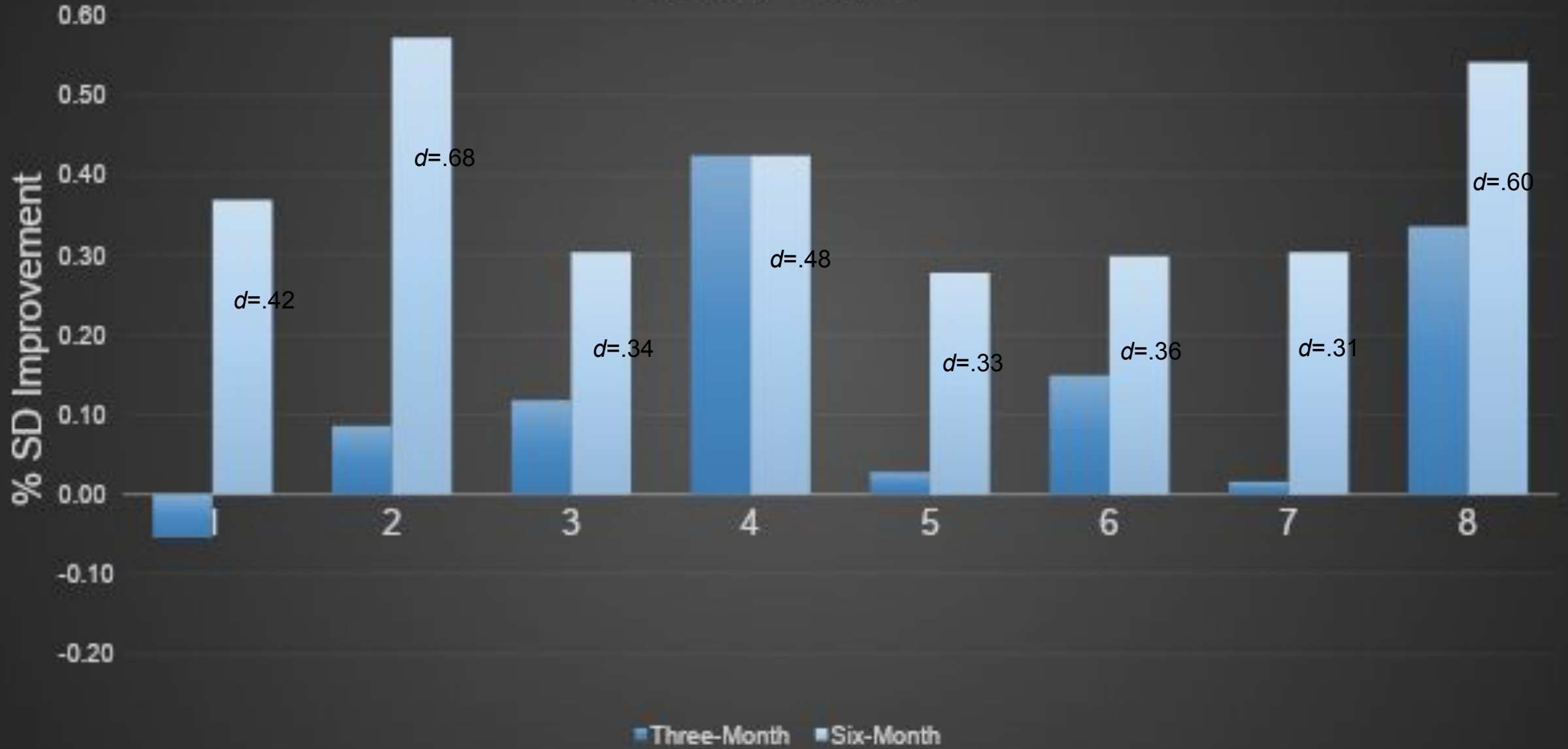
### Pain Intensity



### Pain Interference



# Quality of Life



# DISCUSSION

- This intervention had a modest impact on mental health and quality of life.
- Impact was greater on those who responded to the intervention and increased their exercise
- Gains were noticed even after contact was withdrawn –only after contact was withdrawn in the cases of anxiety and depression
- Small sample size & lack of control group limit our ability to interpret results

# FUTURE DIRECTIONS

- Larger and more representative sample with a control group
- Focus on converting participants to treatment responders
- Examine starting points of participants
- Include participants with greater psychopathology
- Examine treatment potency and dose

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# ACT PROCESSES

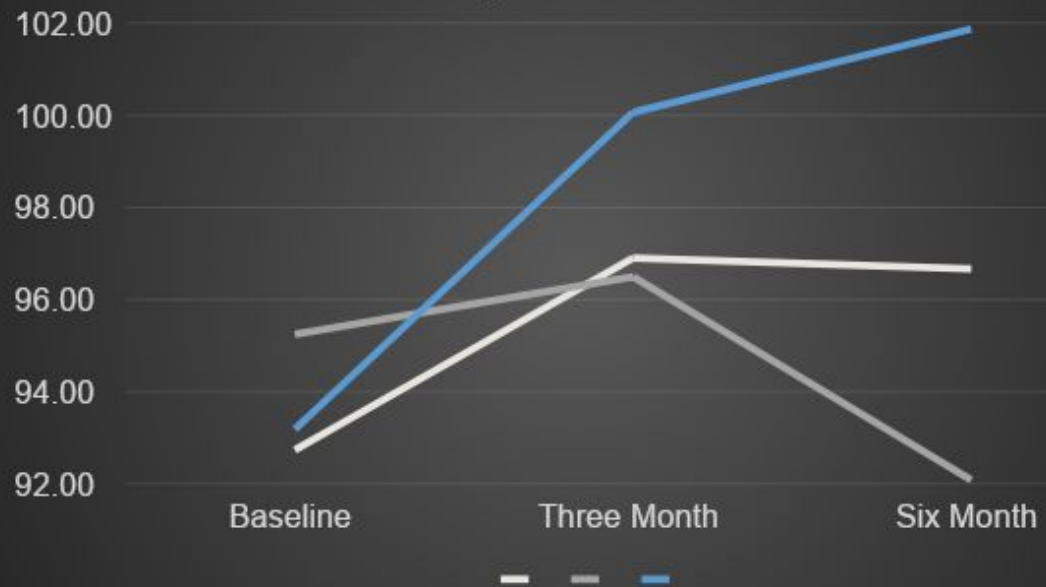
		Baseline		Three Month			Six Month		
		Mean	SD	Mean	SD	d	Mean	SD	d
<b>COMPACT Total</b>	Full Sample	92.73	21.23	96.90	19.52	<b>0.20</b>	96.67	21.98	<b>0.18</b>
	Low Exercisers	95.25	12.29	96.50	15.49	0.09	92.08	13.87	0.24
	High Exercisers	93.19	25.49	100.06	21.46	<b>0.29</b>	101.88	26.80	<b>0.33*</b>
<b>Behavioral Awareness</b>	Full Sample	20.03	6.72	22.47	5.91	<b>0.38</b>	20.97	6.99	<b>0.14</b>
	Low Exercisers	21.17	5.29	24.08	4.98	0.57	19.33	5.43	0.34
	High Exercisers	20.06	7.62	22.75	5.29	<b>0.41</b>	22.94	7.72	<b>0.37*</b>
<b>Openness to Experience</b>	Full Sample	36.03	11.46	36.30	12.32	0.02	37.33	12.83	0.11
	Low Exercisers	37.17	9.18	35.25	11.05	0.19	35.83	11.50	0.13
	High Exercisers	36.56	11.85	38.50	12.72	<b>0.16</b>	39.31	13.94	<b>0.21</b>
<b>Valued Action</b>	Full Sample	36.67	6.96	38.13	8.02	<b>0.20</b>	38.37	7.07	<b>0.24</b>
	Low Exercisers	36.92	5.18	37.17	9.63	0.03	36.92	6.50	0.00
	High Exercisers	36.56	8.56	38.81	7.42	<b>0.28</b>	39.63	7.84	<b>0.37*</b>

Full Sample: Small to medium effect sizes at three months, CompACT .20 & BH Awareness, .38. At six months, CompACT decreased to .18, and BH awareness to .14. Valued action increased to .24.

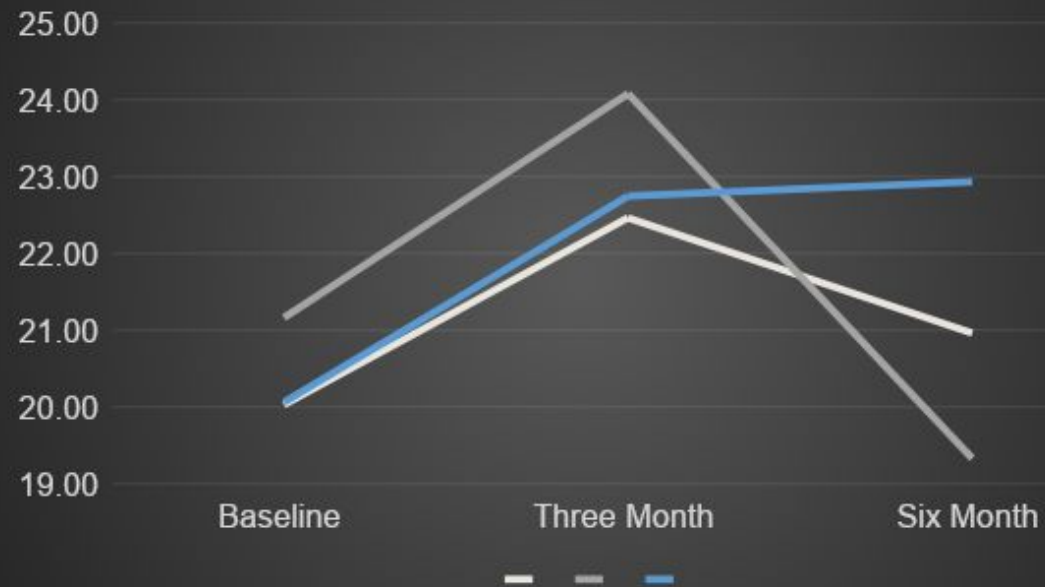
Treatment Responders: Three-month: CompACT .29; BH awareness, .41; Openness, .16; & Valued Action .28. At six months, CompACT total .33; BH awareness, .37; Openness, .21; and Valued Action .37.



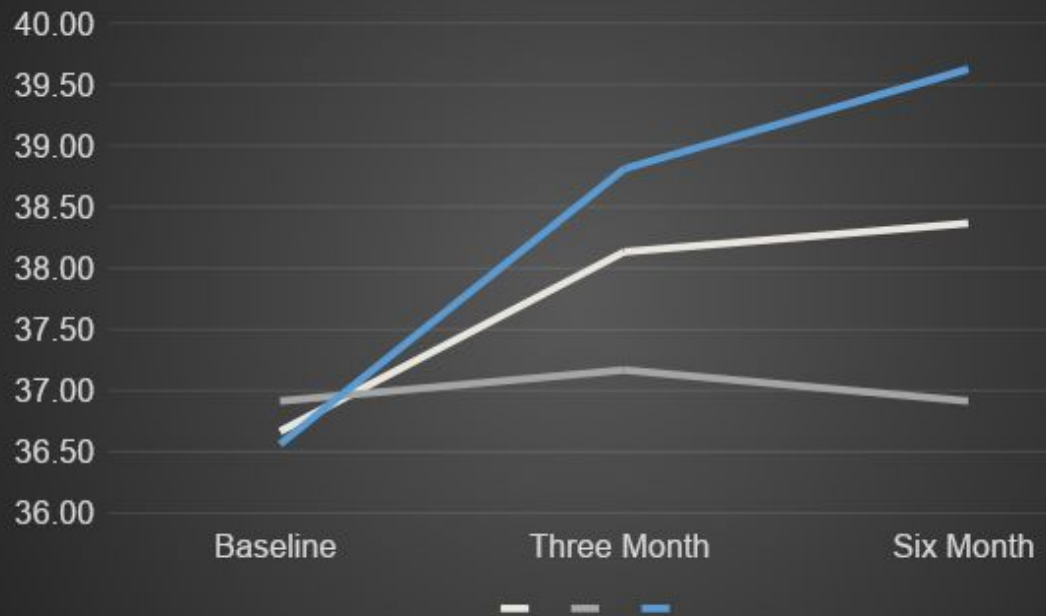
### CompACT Total



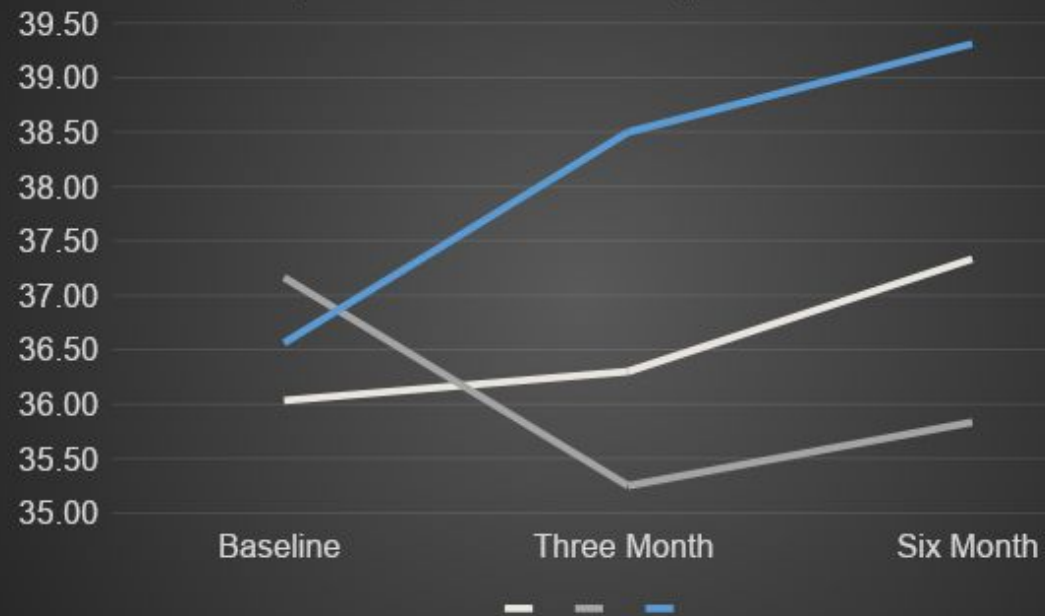
### Behavioral Awareness



### Valued Action



### Openness to Experience



		Baseline		Three Month			Six Month		
		Mean	SD	Mean	SD	d	Mean	SD	d
PROMIS Total	Full Sample	77.87	9.85	78.40	12.17	0.05	74.23	7.32	0.42
	Low Exercisers	74.58	5.21	77.08	12.26	0.27	74.50	7.96	0.01
	High Exercisers	79.44	10.93	78.50	12.90	0.08	73.19	7.05	0.68
Anxiety	Full Sample	7.13	2.90	7.30	4.21	0.05	6.47	3.08	0.22
	Low Exercisers	6.58	2.39	5.58	2.15	0.44	6.33	2.84	0.10
	High Exercisers	7.44	3.39	7.88	4.87	0.10	5.75	2.49	0.57
Depression	Full Sample	5.70	2.67	6.10	4.08	0.12	5.07	2.02	0.27
	Low Exercisers	4.83	1.59	5.83	4.11	0.32	5.50	2.71	0.30
	High Exercisers	6.06	2.89	6.31	4.38	0.07	4.56	1.21	0.68
Physical Function	Full Sample	19.40	1.48	19.50	1.22	0.07	19.47	1.22	0.05
	Low Exercisers	19.92	0.29	19.58	1.16	0.39	19.57	0.62	0.71
	High Exercisers	18.94	1.91	19.50	1.32	0.34	19.31	1.54	0.22
Fatigue	Full Sample	9.07	3.96	8.60	4.15	0.11	7.87	2.93	0.34
	Low Exercisers	7.58	4.19	8.42	5.12	0.18	6.92	3.29	0.18
	High Exercisers	9.88	3.54	8.38	3.34	0.44	8.38	2.66	0.48
Sleep	Full Sample	10.67	1.27	10.93	1.44	0.20	10.77	1.52	0.07
	Low Exercisers	10.58	1.31	11.25	1.06	0.56	11.25	0.87	0.60
	High Exercisers	10.75	1.34	10.94	1.44	0.13	10.63	1.78	0.08
Participation in society	Full Sample	17.37	3.00	17.57	2.76	0.07	17.70	2.72	0.12
	Low Exercisers	17.75	2.42	17.17	3.13	0.21	17.92	2.64	0.07
	High Exercisers	17.56	3.27	17.88	2.55	0.11	17.94	2.72	0.12
Pain Interference	Full Sample	6.20	3.60	6.10	3.28	0.03	5.20	2.20	0.33
	Low Exercisers	5.50	2.28	6.67	3.77	0.37	5.08	2.07	0.19
	High Exercisers	6.25	3.77	5.69	3.07	0.16	5.13	2.28	0.36
Pain Intensity	Full Sample	2.33	2.09	2.30	2.35	0.01	1.70	1.95	0.31
	Low Exercisers	1.83	1.90	2.58	3.06	0.29	1.75	2.22	0.04
	High Exercisers	2.65	2.13	1.94	1.84	0.36	1.50	1.71	0.60