



Effects of Physical Activity Trackers and Motivational Interviewing on Mood in Chronic Low Back Pain

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Rationale

- ~23% of individuals suffer from chronic low back pain (CLBP) annually¹
 - Physical activity (PA) is a recommended treatment² and increasing PA also improves mood-related symptoms, which are prevalent in those with CLBP³
 - The provision of activity monitors and motivational interviewing (MI) to increase PA and the effects on mood in CLBP are unknown
- PURPOSE:** To examine the effects of using a Fitbit alone or in combination with motivational interviewing (MI) on PA and mood in CLBP

Methods

PARTICIPANTS

- Participants were recruited through mass emails and flyers posted around campus
- Inclusion criteria: 1) suffering from CLBP 2) between 24 and 65 years old, 3) regular access to computer or smartphone, 4) willing to wear a Fitbit for 12 weeks
- Exclusion criteria: 1) experience with a PA monitor in the past 6 months, 2) health condition that would prevent increase in PA 3) on blood pressure medication

	FB+MI (n=19)	FB (n=17)	WLC (n=16)	Group Differences (p value)
Age (yrs)	45.5±10.7	41.6±10.3	43.3±10.9	>0.05
BMI (kg/m ²)	28.1±4.6	30.5±5.2	28.9±5.9	>0.05
Body Fat (%)	32.5±8.5	36.7±9.5	34.8±8.9	>0.05
Sex (% male)	47	53	44	>0.05
SF-MPQ Score	22.7±5.9	22.1±4.3	23.9±7.3	>0.05
MVPA/week (in 10-min bouts)	45.7±37.0	60.4±67.1	81.3±66.7	>0.05
Met PA Recs. (n) (%)	0; 0	2; 11.8	3; 18.8	>0.05

Table 1. Participant characteristics at baseline. FB+MI = Fitbit with Motivational Interviewing; FB = Fitbit Only; WLC = Wait-list control; SF MPQ = Short Form McGill Pain Questionnaire; MVPA = moderate-to-vigorous physical activity in bouts of at least 10 minutes. Values are mean ± SD unless otherwise specified.

MEASURES

- Primary outcomes were physical activity (PA) behaviors assessed pre and post-intervention with activPAL and ActiGraph accelerometers.
- Mood was assessed with Profile of Mood States (POMS).

PROCEDURES

- Participants had 3 in-person visits and 2 phone calls (as shown in Figure 1)
- Following baseline assessments, participants were randomized into one of three groups: Fitbit plus motivational interviewing (FB+MI), Fitbit only (FB), or wait-list control (WLC).
- Participants in FB+MI group received one in-person MI session during the week 1 visit
- FB+MI and FB groups received phone calls at weeks 4 and 8 in which participants answered questions regarding the use of the Fitbit. FB + MI group received MI sessions 2 and 3 during these phone calls

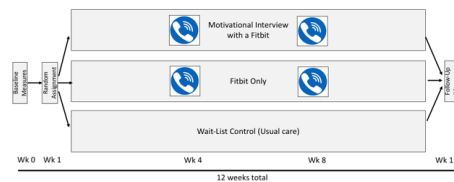


Figure 1. Timeline for visits and phone calls during the intervention.

Analyses

- Group X Time repeated measures ANOVAs were used to evaluate changes in PA (steps/day from activPAL) and changes in mood (POMS)
- Effect sizes (Cohen's *d*) were used to examine changes in PA and mood post-intervention.
- Correlation coefficients (Pearson's *r*) assessed relationships between changes in PA and changes in mood.

Key References

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Key Findings

- Non-significant increases in steps/day were observed for both intervention groups, with a small decrease in steps observed for the waitlist control group.
- Total Mood Disturbance score decreased significantly across all groups with larger effect sizes observed for intervention groups.
- A group by time interaction was observed for vigor for both intervention groups, demonstrating a significant improvement in vigor for intervention groups only.

Results

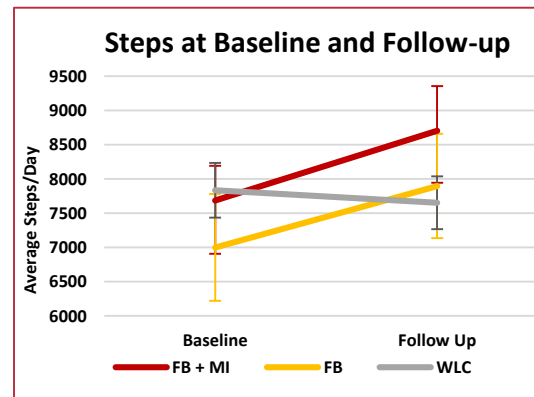


Figure 2. The change in daily steps from baseline to follow-up for the three groups. FB + MI = Fitbit plus MI; FB = Fitbit; WLC = Wait-list control. Data are mean ± SE

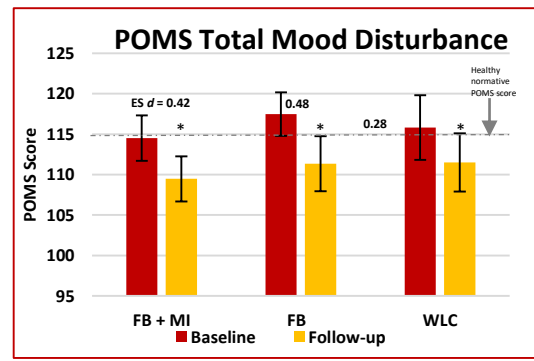


Figure 3. Changes in Total Mood Disturbance at baseline and follow-up. Data are mean ± SE. Dashed line denotes healthy normative POMS data⁴. *denotes follow-up significantly different from baseline ($p < 0.001$)

Conclusions

- The intervention contributed to increasing vigor for our CLBP population, bringing levels toward that of healthy adults.
- Remaining subscales at baseline were more positive compared to those of healthy adults, which may explain why differential improvements by group were not observed.
- Future research could examine changes in mood with a similar intervention in those with a mood profile more typical of a chronic pain population.

Results

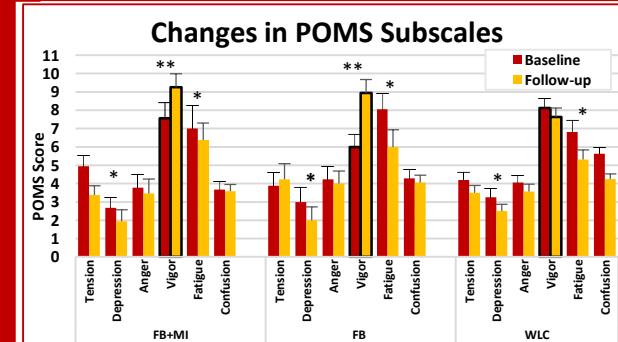


Figure 4. POMS subscales at baseline and follow-up. Data mean ± SE. FB + MI = Fitbit plus MI; FB = Fitbit; WLC = Wait-list control. * denotes significant effect for time ($p < 0.02$). ** denotes group by time interaction ($p < 0.01$).

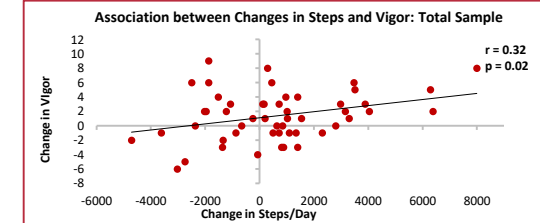


Figure 5. Change in average steps per day and change in vigor for all participants.

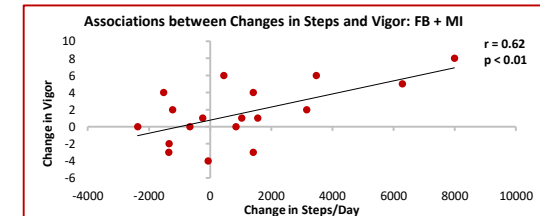


Figure 6. Change in average steps per day and change in vigor for Fitbit plus MI group.