

## BACKGROUND

- There are multiple dimensions of physical activity that account for its known physical and psychological benefits. Aspects such as duration, intensity, social opportunity, and motivation for the activity are all possible moderators of the stress-exercise relationship, and thus the overall effect on well-being.
- A review of the literature shows that:
  - Physical activity is positively correlated with well-being (Asztaloz, Bourdeaudhuij, & Cardon, 2009).
  - Increased physical activity has been shown to decrease anxiety and ailments associated with stress (Carmack, Boudreaux, Amaral-Melendez, Brantley, & de Moor, 1999).
  - The distraction hypothesis states that physical activity may serve as a distraction from stress (Pate et al., 1995).
  - Participation on sports teams can reduce stress. It is hypothesized this is due to its encouraging social camaraderie (Wijndaele et al., 2007).

## OBJECTIVES

- To determine if the objective Fitbit measure differed from the subjective self-report measure of physical activity at predicting dimensions of well-being
- To evaluate the relationship between different intensities of physical activity and dimensions of well-being (positive affect (PA), negative affect (NA), and psychological well-being (PWB))
- To determine if social physical activity is related with well-being
- To determine if the various dimensions of physical activity attenuates the effect of stress on well-being

## METHOD

- Participants were asked to wear a Fitbit accelerometer for 7 days to record the intensity and duration of their activity.
- They were also asked to complete an online survey at the end of each day, answering questions adapted from scales of well-being, stress (DISE), affect (PANAS), and physical activity (PDPAR). In addition, they answered the following questions of social fulfillment experienced in their physical activity:
  - I felt included by others
  - I felt part of a group who share my goals
  - I felt supported by others in this activity
  - Others wanted me to be involved with them
  - I developed a close bond with others
  - I fit in well with others
- A series of multilevel modeling analyses were conducted in Mplus to evaluate between-person and within-person effects of physical activity and stress on well-being.

## RESULTS

Table 1. Within-Person and Between-Person Changes in Dimensions of Well-Being and Affect as a Function of Physical Activity Intensity

	Positive Affect		Negative Affect		Psychological Well-Being	
	WP	BP	WP	BP	WP	BP
<b>Physical Activity Fitbit</b>						
High	0.677***	0.933*	-0.025	-0.116	0.624***	0.636***
Medium + High	0.278***	0.313**	-0.027	-0.024	0.269***	0.288
Total	0.102***	0.118*	-0.010	-0.050**	0.122**	0.130
<b>Physical Activity Self-Report</b>						
High	0.310*	0.509	-0.021	-0.292	0.206	0.301
Medium + High	0.187***	0.358***	-0.027	-0.140	0.153**	0.392**
Total	0.118***	0.508*	-0.040*	0.003	0.143***	0.044
<b>Social Physical Activity</b>	0.134***	0.161**	-0.074***	-0.058	0.228***	0.300***

Note. WP=within-person, BP=between-person. \*p<.05 \*\* p<.01 \*\*\*p<.001

Table 2. Within-Person and Between-Person Changes in Dimensions of Well-Being and Affect as a Function of Stress

	Positive Affect		Negative Affect		PWB	
	WP	BP	WP	BP	WP	BP
Stress Day	-0.067	-0.232	0.201***	0.293	-0.182	-0.045
# Stressors	-0.089*	-0.248	0.111***	0.202*	-0.191**	-0.257

Note. PWB=psychological well-being, WP=within-person, BP=between-person. \*p<.05 \*\* p<.01 \*\*\*p<.001



Figure 1: The Effect of High, Medium, and Low Intensity Physical Activity on Well-Being

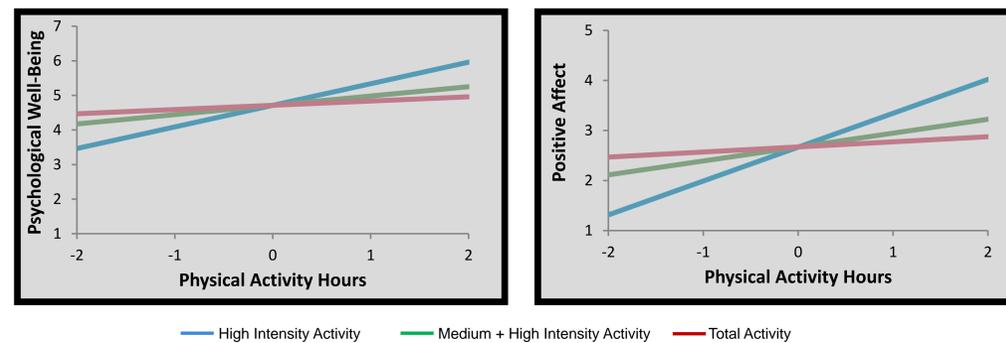
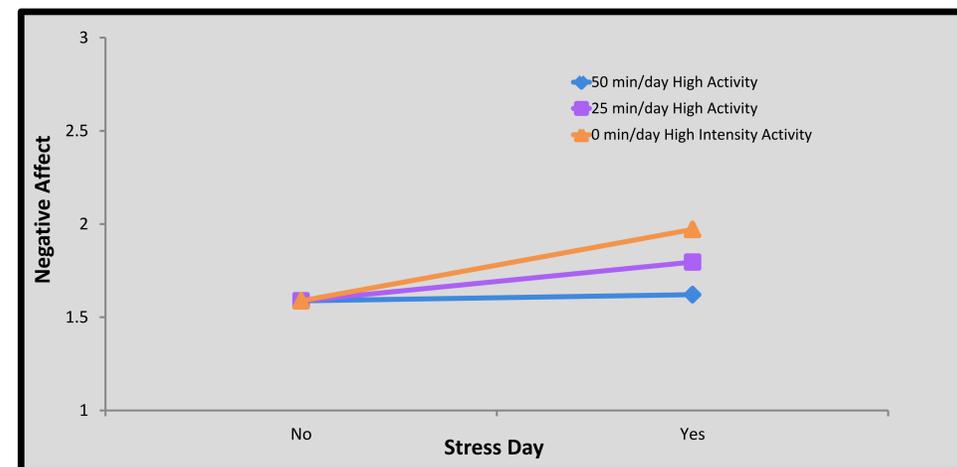


Figure 2: The Interaction Between Negative Affect, Stress Day, and Daily Minutes of High Intensity Physical Activity Averaged Across a Week



## DISCUSSION

### Physical Activity and Well-Being

- The pattern of results were similar for both Fitbit and self-report on measures of well-being, with larger effects for the Fitbit indices of activity. The Fitbit data was used for all further analyses because it is an objective measure and thus less prone to subjective bias.
- At the within-person level high, medium-high, and total physical activity were significantly associated with PWB and PA (Figure 1), suggesting that any intensity of activity is associated with higher levels of well-being.
  - However, for every hour of high intensity exercise, there is a greater increase in scores on the PA and PWB measures.
  - High was the only level that has both within-person and between-person significance for both PA and PWB.
- Physical activity with a supportive social element predicted higher PA and PWB, and lower NA. This implies that exercise classes, and athletic programs that encourage a social atmosphere may be more psychologically beneficial.

### Stress and Well-Being

- Stress day was directly related to negative affect, meaning that on days when a stressor is reported negative emotionality was higher.

### Interactions

- On days when a person experienced a stressor their NA was higher, however those who engage in more high intensity activity during the week showed an attenuation of this effect (Figure 2).
  - These findings are contrary to the research of Carmack et al., (1999) who claim that as a moderator only total physical activity is important.
  - Averages of high activity taken daily were not meaningful.

### Contrary To Prediction

- Exercise intensity did not predict scores on the negative affect measure. This indicates that while exercise may increase well-being and positive affect, it may not serve the purpose of decreasing subjective distress.
- There was no daily interaction between stress, social physical activity and any dimension of well-being, nor was there any daily interaction between stress, level of physical activity, and well-being.

## REFERENCES

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