Mindfulness and Wearing a Fitbit Activity Monitor

Increases Levels of Physical Activity

by

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ABSTRACT

Interest in health and wellness has significantly increased in today's society. Living a healthy and active lifestyle is suggested to promote overall physical and psychological wellbeing. This study explored the effects of wearing a Fitbit Zip activity monitor and the impact of expressing mindfulness on levels of physical activity. It was predicted that expressing mindfulness, as measured by the use of present-tense language during the daily emotional writing task, would moderate the relationship between wearing a Fitbit Zip activity monitor and change in physical activity. Specifically, it was hypothesized daily monitoring would only lead to increased activity among those higher in mindful language. Over the course of five days, participants were asked to wear a Fitbit Zip and to complete a daily questionnaire and writing task at the end of each evening. On the last day of the study, participants completed a follow-up assessment, which suggested that the combination of wearing a Fitbit Zip activity monitor and expressing more mindfulness throughout the week increased levels of physical activity. An important issue for future research is to conduct this study for a longer period of time in order to get more variability in the data. However, despite the limitations of the design, these findings suggest that activity monitoring may be a promising way to promote healthy lifestyle change.

Keywords: *activity monitor, exercise, journaling, mindfulness, physical activity, physical health, psychological well-being*

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INTRODUCTION

Research suggests that participating in regular physical activity improves psychological well-being and overall physical health. In both health and disease, exercise is one of the most frequently prescribed therapies (Vina, Sanchis-Gomar, Martinez-Bello, & Gomez-Cabrera, 2012). Some evidence shows that any form of physical activity could potentially be used as an intervention, by promoting physical and psychological wellness.

It is known that exercise has a lot of benefits, however, there is a current lack of quality evidence and in research observing the mechanisms of exercise. Researchers are still examining the elements behind the benefits of exercise, including how much exercise is needed, what the mechanisms are behind the boost that exercise brings, and why it is still so hard to get the motivation to workout even though exercise has so many benefits (Weir, 2011). It is important to further explore the role of receiving feedback, while engaging in physical activity. Further research consideration should be given to the use of objective monitoring systems while participating in exercise programs (Jakicic et al, 2010). Research suggests that monitoring exercise could potentially influence an individual's motivation to be more physically active. Monitoring physical activity and providing feedback raises self-awareness, which could encourage individuals to improve their overall physical and psychological health, by engaging in more physical activity.

But is it sufficient to merely *participate* in more activity, or do individuals need to be purposeful and *mindful* about the activity? Mindfulness meditation first originated from a cultural and religious perspective. However, it was not until recent years that its ancient roots were implemented into today's society. Over the past decade, Mindfulness-based Stress Reduction training has become available to huge numbers of Westerners, many of who have been combating severe physical and psychological conditions (Baer, 2011). The recent interest in the practice of mindfulness meditation has gained significant attention due to the discovery of an array of physical and psychological health benefits. It was concluded that mindfulness has demonstrated beneficial effects on overall health and wellness, including the mind, the brain, the body, and behavior (Merkes, 2010).

The goal of this study was to further explore the impact of receiving feedback and expressing mindfulness, on levels of physical activity. It was predicted that expressing mindfulness, as measured by the use of present-tense language during the daily emotional writing task, would moderate the relationship between wearing a Fitbit Zip activity monitor and the amount of physical activity participants would engage in. Specifically, it was hypothesized that daily monitoring would only lead to increased activity among those higher in mindful language.

REVIEW OF LITERATURE

Physical Activity

The participation of physical activity on a regular basis has many physical and psychological health benefits. Due to the lack in the support offered by research findings, the exact relationship between exercise participation and improved well-being continues to be ambiguous (Kerr & Wollenberg 2007). Research suggests that exercise has the potential to lower the risk of developing life threatening diseases and could promote overall mental health and cognitive functioning. Stressful events are thought to influence the pathogenesis of physical disease by causing negative affective states, which in turn exert direct effects on biological processes or behavioral patterns that influence disease risk (Cohen, Janicki-Deverts, & Miller, 2007). Improving physical well-being could also lead to improved psychological well being, it is demonstrated in the literature that physical activity may have positive effects on mood and anxiety (Strohle, 2009). Findings even show that working memory could be improved by aerobic exercise performed at moderate intensities (Martins, Kavussanu, Willoughby, & Ring, 2012).

Participating in regular exercise has many benefits for physical health and wellness. Research suggests that engaging in physical activity could help manage weight, reduce the risk of life threatening diseases, and improve the body's immune functioning. Evidence shows that regular physical activity has significant health effects and reduces the risk of premature death from any cause and from cardiovascular disease in both men and women (Vina et al., 2012). Exercise promotes reduction in fat stores, increased energy expenditure offsetting a high fat diet, immune function, insulin and insulin-like growth factors, free radical generation and direct effects on the tumor cell biology (Westerlind, 2003).

There is a significant amount of literature on psychological stress and cardiovascular disease (Dimsdale, 2009). If stress is not appropriately managed, it could potentially lead to heart disease, an increase in blood pressure, loss of sleep, poor eating habits, repressed immune functioning, etc. These stressors often impact other physical diseases in the body such as advanced heart disease and other terminal illnesses. Chronic illness is the leading causes of death in the United States. Cardiovascular disease is one of the major causes of death and reduced quality of life (Steptoe & Brydon, 2009). Engaging in regular physical activity lowers the risk of cardiovascular disease by controlling weight, monitoring blood pressure, and reducing risks of high cholesterol. The positive effect of physical activity or structured exercise programs on blood pressure control have been consistently documented by a number of controlled studies (Kokkinos, 2012).

Exercise is associated with improved levels of dopamine and norepinephrine, which promotes psychological well-being. Stress can also lead to the development of anxiety, depression, and/or other mental health disorders. Stress seems to be one of the most common patient complaints in both mental health and medicine (Dimsdale, 2009). Participating in regular physical activity has the ability to improve mood, increase energy levels, promote better sleep, and reduce symptoms of psychological distress. Individuals that have low levels of dopamine and norepinephrine or high levels of serotonin are often more stressed and are diagnosed with psychological disorders. Unlike traditional treatments for mental illness, which can often carry social stigma, exercise is socially acceptable, has fewer side effects, and has additional health benefits (Chu, Buckworth, Kirby, & Emery, 2009). Although, the evidence for positive effects of exercise and exercise training on depression and anxiety is growing, the clinical use, at least as an adjunct to established treatment approaches like psychotherapy or pharmacotherapy, is still at the beginning (Vina et al., 2012).

Research interest regarding the impact of exercise on concurrent cognitive performance continues to grow considerably (Martins et al., 2012). Participation in physical activity has the ability to improve overall cognitive functioning. Exercise promotes brain development, which

improves memory, attention span, and overall cognitive processing. Engaging in regular physical activity could potentially suppresses memory loss and could combat against brain deteriorating diseases. The literature has comprehensively tested the effects of dynamic exercise and the performance of cognitive functioning (Martins et al., 2012).

Activity Monitoring and Physical Activity

Although there is a large body of research supporting the physical and psychological benefits of physical activity, there is relatively less evidence regarding the mechanisms behind the effects of exercise. Currently, there have been limited studies that have examined the efficacy and/or effectiveness of objective physical activity monitors within the context of comprehensive weight control interventions (Jakicic et al, 2010). Psychological improvements due to the mechanisms behind the benefits of exercise are not all known, it is suggested that a complex interaction of psychological and neurobiological mechanisms underlying, mediating and/or moderating these effects (Strohle, 2009). As interest in physical activity continues to grow within various fields of research, there is hope in further understanding the mechanisms of exercise. Even though significant progress has been made in improving objective monitoring devices and techniques in obesity interventions, additional research in a number of areas is still needed (Jakicic et al, 2010).

Activity monitors serve as a feedback mechanism used to measure outcomes of physical activity. Physical activity monitors typically measure energy expenditure, steps made, and distance traveled throughout the day. It is important that objective measures are used to validate the correlation between physical activity and anxiety, such as pedometers, heart rate monitors, and body fat instruments (Motta, McWilliams, Schwartz, & Cavera, 2012). Monitoring physical activity has many benefits that could help evaluate and provide feedback regarding the participation in physical fitness. Activity monitors could help individuals get more accurate feedback regarding their fitness progress and results. The use of an activity monitor that provides an objective assessment of physical activity within the context of a weight loss intervention may improve weight loss outcomes (Jakicic et al, 2010).

The reliability of an activity monitor could provide individuals with a more accurate understanding of their fitness outcomes and results. According to research, individuals tend to have unrealistic views regarding their physical fitness. It seems as if there is a misrepresentation in the process of engaging in exercise and expected fitness results. In order to have objective exercise results, the exercise-training program should include monitoring from beginning to end (Strohle, 2009). Research suggests that individuals tend to overestimate the quantity and intensity of exercise when using self-reported measures to provide information regarding their participation in physical activity. Improved physical activity and weight loss outcomes in overweight and obese adults could be promoted by providing feedback to participants and information to assist counselors with their interactions with their participants (Jakicic et al, 2010).

Mindfulness

The practice of mindfulness meditation dates back to thousands of years ago where it was first recognized from a cultural and religious perspective. Until recent years, Buddhists primarily practiced mindfulness meditation prior to its introduction into today's mainstream society. Buddhist traditions should have a significant role in the discussions of mindfulness, such that the scholarly work on Buddhist texts and dialogues of mindfulness teaching is represented within Western psychological science (Baer, 2011). There are various types and techniques of mindfulness meditation, which have a collective goal of raising awareness and being present in the moment. Research continues to explore the physical and mental health benefits of participation in mindfulness training (Carmondy & Baer, 2008). It was indicated that a decrease in anxiety scores was correlated with exercise, whether participants were exposed to physical activity or a combination of both physical activity and relaxation training (Motta, McWilliams, Schwartz, & Cavera, 2012).

In today's society, mindfulness is currently being used as an intervention to improve psychological well-being. Mindfulness-based Stress Reduction (MBSR) is a program of awareness-based practices (Santangelo, 2012). From a clinical standpoint, mindfulness is being used in a variety of outpatient/inpatient treatment centers, various types of individualized psychotherapies, and group therapies. Research suggests that mindfulness meditation could be

very beneficial in overcoming a variety of Axis I and Axis II mental health disorders. Mindfulness-based treatments provide significant improvement for people suffering from a variety of problems, including depression, anxiety, pain, and stress (Baer, 2011). Research suggests that mindfulness meditation could be very beneficial in overcoming a variety of Axis I and Axis II mental health disorders. MBSR programs result in improved coping with symptoms, enhanced overall well-being and quality of life, and better physical health outcomes (Merkes, 2010).

Mindfulness meditation is also being used to treat and promote overall physical health and wellness. Studies have found that MBSR programs can specifically benefit people with a range of chronic physical illnesses (Merkes, 2010). Mindfulness is used to treat physical health disorders by a variety of healthcare providers and wellness professionals. There is a large body of research indicating the benefits of mindfulness meditation on battling and preventing life threatening diseases. Research suggests that participating in mindfulness-based interventions could improve overall quality of life and could potentially increase life expectancy in individuals battling a chronic disease. Chronic diseases are correlated with a range of psychological and physical consequences (Merkes, 2010). Mindfulness is currently being used as an intervention to improve physical and psychological well-being.

PRESENT STUDY

Exercise has a lot of benefits, however, there is a current lack in quality evidence and in research observing the mechanisms of exercise. The purpose of the present study was to look at the effect of wearing an activity monitor and to focus on mindfulness as a potential moderator of increased level of physical activity. Mindfulness would influence participants to become more self-aware, which could potentially result in an increase in physical activity throughout the course of the week. It was hypothesized that perhaps people that are more mindful are more attentive to the feedback from the Fitbit Zip activity monitor.

This study took place over the course of a six-day period. At the beginning of the study, participants were asked to complete a baseline questionnaire that consisted of a variety of physical and psychological measures. Participants were asked to wear their Fitbit Zip everyday as well as to complete a daily report at the end of each evening. On the last day of the study,

participants were asked to complete a follow-up questionnaire, which consisted of the same physical and psychological measures acquired at baseline.

METHOD

Participants

Participants (N=50) were recruited via online via the SONA Research Participation System. Participants were also informed about the study through the Psi Chi, International Honor Association for Psychology, network at the ASU West campus. Participation in the study required that students sign up for a given time-slot in order to attend an in-person orientation at the Stress and Social Relations Lab on the ASU West campus. At the study orientation, if participants chose to participate in the study, then they received more information regarding the study as well as information regarding their participation over the course of the next six days. After participants completed the study, they were given the option of either a $15 Starbucks gift card or 6 units of research credits as compensation for their time; completion of the study was not a requirement to receive compensation.

The age of participants ranged from 18 years to 50 years old, with the mean age of 23.22. A total of 20 males and 30 females participated in this study. Fifty-six percent of participants reported their ethnicity to be European American / Caucasian, 31.3% of participants reported to be Hispanic / Latino, 8.3% of participants reported to be Biracial / Multiracial / other, and 4.2% of participants reported to be Asian American. Fifty-eight of participants reported to have very good physical health, 42% of participants reported to have very good psychological health, and 48% of participants reported to have very good immune health. Fifty-two percent of participants reported to engage in physical activity on an average of 1-3 times per week, 28% of participants typically spent 60 minutes engaging in physical activity at a given time, and 66% of participants reported to engage physical activity that was reported to be of moderate level of intensity.

Procedures

This study took place over the course of a six-day period. On the first day of the study, participants attended an in-person orientation at the Stress and Social Relations Lab on the ASU

West campus. At the orientation for this study, participants received a programmed Fitbit Zip that they were asked to wear from the moment they wake up to the moment they go to sleep. Individuals who agreed to participate in this study also took an initial baseline assessment on the first day of the study. Over the course of the next five days, participants were asked to wear their Fitbit Zip everyday as well as to complete a daily report at the end of each evening. On the last day of the study, participants completed a follow-up assessment. The initial assessment, daily report, and follow-up assessment were provided through a SurveyMonkey link that participants received via the SONA Research Participation System. The following standard tools were used in the present study.

Measures and Materials

Psychological Measures. The initial baseline assessment included various psychological questionnaires, all selected for their relevance to measure psychological changes that have occurred throughout the week. The *State-Trait Anxiety Inventory for Adults (*STAI; Spielberger et al., 1968) was used to measure perceived anxiety. The *Perceived Stress Scale* (PSS; Cohen et al., 1983) was used to measure perceived stress. To measure perceived depression, *The CES-D Scale: A Self-Report Depression Scale for Research in the General Population* (CES-D*;* Radloff 1977) was used. The *CHIPS- Symptom Reports* (CHIPS; Cohen & Hoberman, 1983) was used to measure physical symptoms. *The Penn State Worry Questionnaire (*PSWQ; Meyer et al., 1990*)* was used to measure perceived stress and worry. To measure perceived satisfaction with life*,* the *Satisfaction With Life Scale* (SWLS; Diener et al., 2006) was used.

Physical Measures. *A Short Questionnaire for The Measurement of Habitual Physical Activity in Epidemiological Studies* (MHPA; Baecke, 1982) was used to measure perceived physical activity. To measure perceived exertion, *The Borg Rating of Perceived Exertion* (RPE, Borg et al., 1983) was used. The Fitbit Zip is an activity monitor that was used to measure calories burned, steps made, and distance traveled throughout the day. The Fitbit Zip has the capability of syncing those stats to a computer via the Fitbit dashboard and via the Fitbit application for smartphones. For the purpose of this study, participants were only asked to report

calories burned, steps made, and distance traveled throughout the day by manually recording this data on the daily report surveys. Following the orientation for this study, participants were asked to wear the Fitbit Zip on either their belt loop, pant pocket, waistband, or on any piece of outerwear that is comfortable and preferably closest to the body for most accurate results. The Fitbit Zip was programed with the participant's personal information, which included gender, age, height, and weight. In order to protect privacy, participants were asked to manually enter this data themselves through the Fitbit dashboard during the orientation. The Fitbit Zip measured calories burned, steps made, and distance traveled throughout the day. Participants manually record this data from their Fitbit Zip on a daily report that was provided through a SurveyMonkey link, which participants received via the SONA Research Participation System.

Daily Report. The daily report asked participants to report calories burned, steps made, and distance traveled throughout the day by manually recording this data from their Fitbit Zip into SurveyMonkey. The daily report asked participants to report any participation in physical activity; the time spent engaging in physical activity, and the intensity of the physical activity they engaged in by using *The Borg* Rating *of Perceived Exertion* (RPE, Borg et al., 1983). Participants were also asked to report perceived daily stress using the *Perceived Stress Scale* (PSS; Cohen et al., 1983) and to report daily mood using the 8 item bipolar mood rating scale, *Mood Questionnaire* (Czikszentmihalyi, 2001). The daily report also asked participants to take five minutes to write about and reflect on a positive or negative experience that they had that day. Participants were given the choice to write about a positive or negative experience. The *Linguistic Inquiry and Word Count (LIWC)* was used to measure present tense language. The LIWC is a text analysis software designed by James W. Pennebaker and colleagues, which calculates the percentage of which people use different categories of words. For the purpose of this study, present tense language was used to measure mindfulness.

In order to complete this study, participants then completed a follow-up assessment on the last day (sixth day) of the study. The follow-up assessment included various questionnaires used to measure physical and psychological changes that have occurred throughout the week. The follow-up assessment included the same measures completed at baseline.

RESULTS

Composite Variables and Preliminary Analyses

Preliminary participant activity level was measured during the baseline questionnaire. In order to examine overall change from baseline to follow-up, change in Total Physical Index was analyzed from baseline to follow-up. The Change in Total Physical Index variable was composed of the difference between Total Physical Index at baseline and Total Physical Index at follow-up. Participant overall physical index at baseline had a mean of 9.75 (SD=19.65) and a mean of 13.66 (SD=25.34) for overall physical index at follow-up. There was a marginal significant change from baseline to follow-up, $F(1,39) = 3.02$, $p = .09$.

Mindfulness was measured by analyzing the average use of present-tense language during the daily emotional writing task throughout the week. The Average Present variable was calculated to test mindfulness during the writing task. Participant use of present-tense language had a mean of 6.51 (SD=2.62). The Fitbit Zip data was measured by combining calories burned, steps made, and distance traveled into one variable, the Fitbit Composite variable. The Fitbit Composite variable illustrated participant physical activity during the week. Z-scores were obtained for the Fitbit Composite variable and Present variable. In order to give a general sense of activity over the week, descriptive statistics for the Fitbit activity variables are shown in Table 1. Participants walked an average of 3.81 miles per day (SD=2.63), took an average of 7,277.20 steps (SD=5,140.40), and burned an average of 1995.88 calories (SD=621.94). These means suggest that the present sample may have been more active than the general population. I return to this issue in the Discussion section.

Table 1: Participant Daily Activity Captured by Fitbit Zip Activity Monitor

Fitbit Composite				
	Mean	Std. Dev.	Min.	Max.
Miles	3.81	2.63	1.20	14.76
Steps	7277.18	5140.40	2477.80	23914.60
Calories	1995.88	621.94	1058.80	3557.20

Primary Analysis

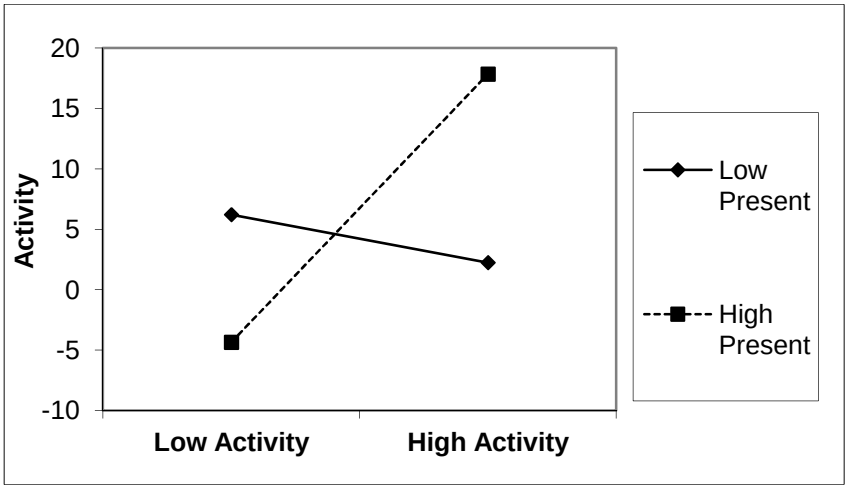
It was predicted that expressing mindfulness, as measured by the use of present-tense language, during the daily emotional writing task would moderate the relationship between wearing a Fitbit Zip activity monitor and level of physical activity participants would engage in. To test this hypothesis, a moderation analysis was conducted using a hierarchical regression in SPSS v21.

The Fitbit Composite and Present variable were entered at Step 1 and the variable reflecting their interaction was entered at Step 2. At Step 1 of the analysis, the main effects explained 35% of the variance (p = .004). There was a significant main effect of daily activity, such that more activity during the week was associated with an increase in activity from baseline to follow-up, b = 11.54, t(21) = 3.42, p = .003. The main effect for mindfulness was nonsignificant, b = 5.29, t(21) = 1.54, p = .139.

At Step 2 of the analysis, adding the interaction explained an additional 22% of the variance. The main effect of daily activity was qualified by the interaction between activity and mindfulness, b = 8.26, t(20) = 3.49, p = .002. In the full model, both the main effects dropped below significance (physical activity: b = 5.23, t(20) = 1.60, p = .127; present; b = 1.27, t(20) = .42, p = .677).

In order to interpret this interaction, we plotted activity change scores at +/- 1 SD around the means of mindfulness and daily activity. As seen in Figure 1, higher daily activity levels were associated with an increase in activity from baseline to follow-up, but *only* among those higher in mindful language. This pattern was confirmed by an analysis of the simple slopes at different levels of the moderator: The activity slope was significant for high mindfulness (t (24) = 4.85, p < .001), but not for low mindfulness (t (24) = -.61, p = .55).

Figure 1: Daily Activity Leads to Increase in Overall Activity Among Those High in Mindfulness



Various analyses were also performed on the psychological measures to examine if any psychological changes occurred throughout the week. However, there were no significant psychological changes from the initial baseline assessment to the follow-up assessment that was completed at the end of the week. It appears that the effect of wearing a Fitbit Zip activity monitor and mindfulness serving as a moderator of increased level of physical activity did not have an effect on psychological well-being throughout the week.

DISCUSSION

This study looked at the effects of wearing a Fitbit Zip activity monitor and focused on mindfulness as a potential moderator of increased level of physical activity. Specifically, it was hypothesized that daily monitoring would only lead to an increase in activity levels among participants that expressed more mindful language throughout the week. This study explored the impact of receiving feedback and expressing mindfulness, on levels of physical activity. It was predicted that expressing mindfulness, as measured by the use of present-tense language, during the daily emotional writing task would moderate the relationship between wearing a Fitbit Zip activity monitor and participant physical activity. According to the findings, mindfulness seems to influence participants to become more self-aware, which is associated with an increase in physical activity throughout the course of the week.

In hopes of fully understanding the mechanisms of exercise, the purpose of this study was to explore the impact of activity monitoring. Findings from this study suggest that monitoring physical activity is associated with an increase in physical activity for those high in mindfulness. Monitoring physical activity provides individuals with more accurate feedback regarding their fitness progress and results, which encourages individuals that are more mindful to be more attentive to feedback. Physical activity monitoring and providing objective feedback raises self-awareness, which encourages those that are more mindful to be more receptive to the feedback of the activity monitor.

In this study, present-tense language, during the daily emotional writing task moderated the relationship between wearing a Fitbit Zip activity monitor and level of physical activity participants engaged in. These results are correlational, and it is unknown what factors might have led some participants to use more mindful language in the first place. One important question for future research is whether mindfulness could be encouraged and increased as a boost to physical fitness interventions.

Limitations/Future Directions

A limitation of the present study is the small sample size. A larger and more diverse sample could potentially lead to different findings. Advertising as a study of activity might have biased the sample and could have encouraged people to improve their physical fitness or interest people that were more physically active to participate. This possibility is consistent with the relatively high levels of daily activity in the sample. Future research should try to attract a broader sample of both active and inactive people.

Another limitation is that this study took place over the course of a six-day period. Participants should wear the Fitbit activity monitor for a longer period of time in order to obtain more variety in life contexts, and a better sense of what happens over time. Specifically, monitoring physical activity for a longer period of time could result in more change in psychological well-being. The majority of this study took place outside of the laboratory so there could be a presence of various environmental factors that could have potentially impact the results. Even though participants were asked to report data from their Fitbit Zip, having

participants synch their data to the Fitbit dashboard on a computer or via the Fitbit application could potentially result in less participant error.

This study should be replicated and conducted for a longer period of time in order to get more variability in the data. This study could also be done in a more controlled research setting where participants are monitored throughout the course of the study. Cortisol levels and cardiovascular activity could also be collected in order to measure changes in psychological reactivity. The Fitbit dashboard or the Fitbit application should be used to automatically synch data from the Fitbit Zip to either the Fitbit dashboard or the Fitbit application instead of having participants manually record data from their Fitbit Zip onto SurveyMonkey.

Last, but not least, this study could be re-done with a no-Fitbit control group. Although the within-subject design allowed me to observe activity levels before and after daily monitoring, it is unclear to what extent activity increased merely as a function of the repeated assessment. This issue could easily be resolved by including a no-monitoring condition.

Despite the limitations of the current study, monitoring physical activity suggests to promote a healthier lifestyle. It is a well-known fact that exercise has numerous physical and psychological health benefits. Medical and mental health professionals recommend exercise for both prevention and treatment of various conditions. As interest in exercise continues to grow, it is important that more is understood regarding the benefits of physical activity monitoring. According to the findings of the current study, it is suggested that receiving feedback from a physical activity monitor could potentially raise awareness and encourage individuals to improve their lifestyle —particularly if they are more mindful about the monitoring. Physical activity monitoring should be recommended for all exercise regimens so that the professionals and the patients are receiving objective feedback in order to get more accurate health outcomes.

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APPENDIX A

IRB APPROVAL LETTER

ASU Knowledge Enterprise Development

APPROVAL: EXPEDITED REVIEW

Matt Newman
Social and Behavioral Sciences, School of
602/543-8226
Matt.Newman@asu.edu

Dear Matt Newman:

On 9/13/2013 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Fitbit Zip Activity and Lifestyle Tracking
Investigator:	Matt Newman
IRB ID:	STUDY00000016
Category of review:	(4) Noninvasive procedures, (7)(b) Social science methods, (7)(a) Behavioral research
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Fitbit zip Activity and Lifestyle Tracking Written Consent.pdf, Category: Consent Form; • Fitbit zip Activity and Lifestyle Tracking IRB.docx, Category: IRB Protocol; • Study Materials, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);

The IRB approved the protocol from 9/24/2013 to 9/23/2014 inclusive. Three weeks before 9/23/2014 you are to submit a completed "FORM: Continuing Review (HRP-212)" and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 9/23/2014 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc:
Viorela Tarachiu

APPENDIX B

FITBIT ZIP IMAGE


fitbit
7:30
fitbit
3 VOLTS
LITHIUM CELL