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Turning the tables: A student's study into the frequency of physical activity among university faculty and staff

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Turning the Tables:

A Student's Study into the Frequency of Physical Activity among University Faculty and Staff

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Abstract

The purpose of this study was to examine the relationship between physical activity and gender, position, social support, and motivation. The researcher conducted an observational, cross-sectional study of James Madison University faculty and staff (n=423) through the use of SurveyPlanet. The survey was adapted from the 2002 International Physical Activity Questionnaire (IPAQ), and participants responded to items regarding their current moderate and vigorous physical activity level based on the previous seven days, as well as items assessing level of motivation and sources of social support. Results of a multiple regression analysis, $F(4, 412) = 6.811$, $p < .001$, adj. $R^2 = 0.062$, indicated significant effects of gender, social support and motivation on physical activity. Pearson's correlation demonstrated a positive correlation between social support ($r(416) = 0.188$, $p < 0.0005$) and motivation ($r(416) = 0.140$, $p < 0.0005$) and physical activity. Further research is needed to examine other factors that affect physical activity levels among faculty and staff in a university setting.

Introduction

Physical activity, an issue of tremendous significance, is commonly monitored and prioritized throughout grade school, high school, and college. Many general education requirements include a general health class. However, once an individual graduates and begins a professional career, the responsibility to engage in recommended amounts of physical activity is left to the individual. For those who have received little or no education on health, knowing when and how much physical activity to complete can be a daunting task. On average, adults between the ages of 18 and 64 require 2.5 hours of moderate physical activity per week, coupled with two or more days of resistance training (Center for Disease Control and Prevention [CDC], 2015). Physical activity can be accomplished by means of workout regimens or strenuous work labor. If completing physical activity during leisure time or for enjoyment, individuals may attempt different forms of physical activity before deciding which type of exercise they prefer. Further, when individualized and tailored to the needs of a specific person, exercise has the potential to become a fun activity and pastime. Furthermore, it is recommended that an exercise regimen is tailored on an individual basis, as there may be contributing factors, such as chronic disease or income, that influence an individual's engagement in physical activity (Kelly, Edney, Moran, Srikanth, & Callisaya, 2016). The study by Kelly et al. examined the negative effects of having type II diabetes on physical activity level (2016). Nevertheless, the present study focused on the effects of occupation/position, gender, social support, and motivation on engagement in physical activity.

Definitions of terms

A. Social Support: refers to family, friends, and peers who support a person throughout his or her life (Gore, 1973). In this study, social support included family, friends, and peers. Additionally, it included potential physical activity accountability partners.

B. Position/occupation: refers to the profession in which one works (Position, n.d.). In this study, positions included faculty and staff at a public four-year university. Faculty included professors, adjunct faculty, and advisors. Staff was comprised of individuals working in information technology, housing, UREC/Athletic Training, administration, facilities management, libraries, and other classified staff.

C. Motivation- is defined by the Merriam Webster dictionary as the reasoning behind engaging in a particular behavior (Motivation, n.d). In this study, motivation denoted motivation to participate in physical activity.

Review of Literature

In consideration of physical activity, the CDC as well as the World Health Organization (WHO) offer generalized guidelines for physical activity engagement, disregarding the unique needs of each individual (CDC, 2015; World Health Organization [WHO], 2017). However, reaching these recommendations is more attainable in some professions than it is among other professions (Fountaine, Piacentini, & Liguori, 2014). Previous studies have demonstrated that those employed in areas such as facilities management are more active than their faculty or administration counterparts (Fountaine et al., 2014). This discrepancy is attributed to the heavy labor in which these employees engage each day (Fountaine et al., 2014). Following the same reasoning, those working in areas such as housekeeping are more physically active as they are consistently on their feet and cleaning numerous rooms throughout the day. In contrast,

researchers have found that not only are those holding professor positions sedentary, but the degree of their sedentary lifestyle is often severe (Bird, Shing, Mainsbridge, Cooley, & Pedersen, 2015; Turkmen, Ozkan, Murat, & Bozkus, 2015). In particular, research suggests that individuals in this field spend up to six hours per day seated at a desk (Bird et al., 2015; Turkmen et al., 2015). For example, a study demonstrated that professors give additional reasons or excuses for not engaging in physical activity, such as unappealing recreation centers and limited faculty programs (Ajibua et al., 2013). As a result, professors require more motivational cues to engage in physical activity (Turkmen et al., 2015; Ajibua et al., 2013). Based on these findings, it appears that profession or division of work is one factor influencing potential physical activity level of individuals, especially during the working hours.

Researchers have also found that gender is a contributing factor when it considering participation in physical activity, more specifically when referring to moderate to vigorous activity (Viciana, Mayorga-Vega, & Martfnez-Baena, 2016). In general, men have been found to be more physically active than women (Viciana et al., 2016; Kelly et al., 2016).). This trend was found to hold true across all ages, including adolescents and older adults (Viciana et al., 2016; Kelly et al., 2016). One potential reason for the variations among males and females is the type of work or position held. For example, men, generally speaking, are more likely to hold jobs that require intense or vigorous activities, such as heavy lifting (Platts, Netuveli, Webb, Zins, Goldberg, Blane, & Wahrendorf, 2013). In contrast, women in the workplace are more likely to have less physically strenuous jobs (Platts et al., 2013). Therefore, the job options for men and women could influence their ability and motivation to engage in physical activity. Additionally, studies have found that men are more likely to have self-motivation to engage in physical activity than women (Daley & Duda, 2006; Lauderdale, Yli-Piipari, Irwin, & Layne, 2015). If

men are more internally motivated, then they may be more likely to engage in physical activity. Therefore, gender appears to be a variable that influences engagement in physical activity.

Social support is another variable identified in the literature as having a potential impact on participation in physical activity. As previously mentioned in the definition of terms, social support refer to the family, friends, and peers who support a person throughout his or her life (Gore,1973). These supporters are the individuals who inspire and push someone to engage in an activity or behave in a specific manner. Current research has identified a positive correlation between social support and level of physical activity (Koller de Paiva, de Camargo, de Paula da Silva, & Siqueira Reis, 2016; Mohnsam da Silva, Azevedo, & Gonçalves, 2013). Studies show that those who have higher levels of support are more likely to maintain a behavior of interest (Koller de Paiva et al., 2016; Mohnsam da Silva et al., 2013). In particular, those who have accountability partners are more likely to engage in physical activity (Kahn et al., 2002). Additionally, those who lack social support have more difficulty beginning or maintaining a healthy behavior (Koller de Paiva et al., 2016; Mohnsam da Silva et al., 2013). Therefore, social support has been identified as another influential determinant in the decision to engage in physical activity.

Finally, motivation, as previously outlined in the definition of terms, relates to the likelihood or probability that an individual will partake in the specific activity (Motivation, n.d.). In this instance, motivation relates to motivation to engage in physical activity. Previous studies have found that programs must be implemented to encourage individuals, especially those acclimated to sedentary lifestyles, to become more active and have a positive effect on lifestyle changes. For example, studies have compared the physical activity habits of employees of universities who did and did not offer special health promotional activities (Haines, Davis,

Rancour, Robinson, Neel-Wilson, & Wagner, 2007; Leininger, Harris, Tracz, & Marshall, 2013; VanSickle, Hancher-Rauch, & Hicks, 2010). While dramatic changes were not evidenced in all studies, researchers advised that incorporating motivation or competition could increase the likelihood of inspiring employees to engage in physical activity (Haines et al., 2007; Leininger et al., 2013; VanSickle et al., 2010). Further, studies have shown that lack of staff policies and faculty programs greatly decrease the motivation for engaging in physical activity (Ajibua et al., 2013). Therefore, if the atmosphere of the work environment is shifted to promote or require physical activity through competition and rewards, then employees of universities may be further inclined and encouraged to engage in physical activity more frequently.

Significance of Study

The purpose of the current study was to determine the relative relationships among physical activity and position, gender, social support, and motivation among the faculty and staff at James Madison University. Previous studies have not included gender, social support, motivation, and position as interdependent components or determinants of physical activity. Therefore, there is a need to see if the interplay of these variables affects the outcome of physical activity engagement.

Hypotheses

The researcher proposes four primary hypotheses. First, the researcher hypothesizes that those participants who hold a position requiring more physical labor, such as facilities management, will demonstrate a higher occurrence of physical activity than those working in the faculty professions, such as professors. Second, the researcher hypothesizes that men will demonstrate a higher degree of physical activity than their women counterparts. Third, the researcher hypothesizes that participants who have found social support to assist with their

physical activity goals will demonstrate higher frequency of physical activity than those who lack social support. Finally, the researcher hypothesizes that as the level of participant motivation increases, their likelihood of engaging in physical activity on a regular basis also increases.

Overall Hypotheses

H_O = There is no relationship between position/occupation and frequency of physical activity.

H_A = There is a relationship between position/occupation and frequency of physical activity.

Sub hypothesis: Gender

H_O = There is no relationship between gender and frequency of physical activity.

H_A = There is a relationship between gender and frequency of physical activity

Sub hypothesis: Social Support

H_O = There is no relationship between social support and frequency of physical activity.

H_A = There is a relationship between social support and frequency of physical activity.

Sub-hypothesis: Motivation

$H_{O=}$ There is no relationship between motivation and engagement in physical activity.

$H_{A=}$ There is a relationship between motivation and engagement in physical activity.

Methodology

Description of Participants

The findings displayed in Table 1 summarize the demographic characteristics of the final sample. Of the 423 participants surveyed, aged 18 and above, the gender distribution of the sample was 67.2% female (n=281), 32.8% (n=137) male. The majority of participants were 35-64 years of age (76.3%; n=319). Although an overwhelming majority (93.5%, n=391) identified as Caucasian, several other ethnicities were represented. Nevertheless, this is a less accurate

representation of racial and ethnic diversity at JMU and could affect the results of the study. Approximately 27.3% (n=115) of the participants indicated a household income ranging from $100,000-140,000; however, some participants (10.5%, n=44) opted to leave the question unanswered. Time employed at JMU ranged from several months to forty-six years. Finally, the majority of participants worked in higher education/professor positions (37.4%, n=157), while many other staff occupations, such as facilities management, and information technology (IT) were represented in the sample. For the sake of comparing faculty and staff, professors, adjunct faculty, and most advisors were categorized as "faculty." In contrast, information technology, housing, UREC/Athletic Training, Administrative, and facilities management were classified as "staff." For those who listed "other," the researcher looked at their particular department, such as librarian, and recoded participants individually. Once participants were recoded, the participants were approximately equally distributed as faculty (N=213) and staff (n=204).

In total, the survey was sent out to 3,992 employees. However, the researcher received response emails that some potential participants were no longer utilizing the email provided for the study. Of total inquiries, the recorded response rate was 10.5%. Additionally, although originally 423 participants responded to the study, four surveys were excluded due to incompleteness. Additionally, there was one Genderqueer, Gender-Non Conforming individual who participated in the study but was excluded during analysis.

Procedures and IRB Approval

Before conducting the study, approval from JMU's Institutional Review Board (IRB) was acquired. The researcher obtained the sample via a SurveyPlanet survey, which was administered to 3,992 JMU faculty and staff through JMU bulk email (See Appendix A). Within the email text, participants were provided with the approved consent form, which explained that clicking

on the hyperlink indicated consent to participate in the study. Further, participants could withdraw their participation at any time. Additionally, participants were informed that they could obtain final results of the study by sending an email of request to the researcher. After two weeks had elapsed, the researcher closed the survey and began entering data into SPSS. Once all data was inputted into SPSS, the online SurveyPlanet account was deleted.

Instruments and Measures

Participants were asked to begin the survey by answering seven demographic questions including age, gender, race, position, years employed at James Madison University, department of work, and house income estimate. The demographic information questions were adapted from SurveyPlanet question templates or constructed by the researcher. Next, participants were asked to complete twenty questions concerning their current level of physical activity at work as well as around the home or during their leisure time. This portion of the survey was adapted from the 2002 International Physical Activity Questionnaire (IPAQ), and, in order to only examine moderate and vigorous physical activity, only several questions were utilized for analysis. Participants selected a category that best described their behavior, ranging from “no physical activity” to “4-7 days” of the determined activity. Participants were given scores based on inactivity or engagement of moderate and vigorous physical activity. Moderate activity was given 0 points for no activity, 1 point for “1-3 days” of activity, and 2 points for” 4-7 days” of activity. Similarly, vigorous activity was given a score of 0 for no activity, 1 point for “1-3 days” of activity and 2 points for “4-7 days” of activity. The lowest possible score was 0, indicating no physical activity, while the highest possible score was 8, indicating a high level of physical activity. The average score of participants was 2.78, with a standard deviation of 1.71, and a range of 0-8 (Table 2).

Second, the researcher created five questions to examine the respondent's social support. Individuals checked a box to denote areas of their lives in which they received social support. Possible scores ranged from 0-5, with 0 denoting no social support and 5 denoting the highest level of social support. The average score was 1.70, with a standard deviation of 1.01 and a range between 0 and 5.

Additionally, eight questions were asked to determine the participant's motivation to engage in physical activity. For three of the questions, participants expressed their agreement with each statement by selecting a number from 1 to 5 based on a 5 point Likert Scale. However, to make agreement or disagreement dichotomic, *strongly disagree, disagree, and neutral* were given a score of 0, while *agree and strongly agree* were given a score of 1. For the other five questions, participants were asked to check the boxes of all programs or events that would motivate them to increase their level of physical activity. Participants who checked the box received a score of 1 while those who did not received a score of 0. In total, the lowest possible score for motivation was a 0 while the highest possible score was 8. Overall, participants' responses to this portion of the survey generated a mean score of 3.94, with a standard deviation of 1.76, and a range between 0 and 8.

Analysis

Following the collection of surveys, the data was exported from SurveyPlanet and analyzed using SPSS software. Before the data was analyzed, four questions regarding moderate and vigorous physical activity (Questions 8,10, 20, and 22) were recoded in order to take into account the specific amount of physical activity. Moderate activity was given 0 points for no activity, 1 point for "1-3 days" of activity, and 2 points for" 4-7 days" of activity. Similarly, vigorous activity was given a score of 0 for no activity, 1 point for "1-3 days" of activity and 2

points for “4-7 days” of activity. Additionally, participants’ positions from question six were recoded to differentiate between faculty and staff. Professors, adjunct faculty, and most advisors were categorized as faculty. In contrast, information technology, housing, UREC/Athletic Training, administrative, and facilities management were classified as staff. For those who answered “other”, the researcher looked at their job description and department, such as librarian, and classified them accordingly. Refer to Appendix B to reference the exact survey questions that were recoded.

Demographic information was analyzed in frequencies. In contrast, the level of physical activity and degrees of social support and motivation were analyzed to give averages, standard deviations and ranges. In order to generate total scores for questions regarding physical activity levels, motivation, and social support, data for each category was summated. Based on these summated categories, Pearson and Spearman’s correlations were completed. Then, a multiple regression was run to predict level of physical activity from gender, position, social support, and motivation. There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.942. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. The assumption of normality was met, as assessed by Q-Q Plot.

Results

A Spearman's rank-order correlation was run to assess the relationship between gender and position and level of physical activity. Neither gender ($r_s(416) = -0.076$, $p = 0.120$) nor position ($r_s(416) = -0.070$, $p = 0.151$) were significantly correlated with level of physical activity. A Pearson's product-moment correlation was run to assess the relationship between motivation and social support and physical activity level. There was a positive correlation between social

support and engagement in physical activity, $r(416) = 0.188$, $p < 0.0005$. Likewise, there was a positive correlation between motivation and physical activity level, $r(416) = 0.140$, $p < 0.0005$. See Table 3 for Spearman and Pearson's coefficients

The multiple regression model predicting physical activity was statistically significantly $F(4, 412) = 6.811$, $p < 0.001$, adj. $R^2 = 0.062$. The R^2 value demonstrated that, despite any of the variables being significant, these variables, in total, only accounted for 6.2% of the overall influences of physical activity. Gender, social support, and motivation added statistically significantly to the prediction, $p < 0.05$. Position was not statistically significant, $p = 0.095$. Regression coefficients and standard errors can be found in Table 4.

Discussion

This cross-sectional observational study examined the interaction of gender, position, social support, and motivation on engagement in physical activity. The researcher found that gender, social support, and motivation all predicted engagement in physical activity on a statistically significant level. Position was not found to be statistically significant determinant in predicting physical activity level. Further, the overall power of the study was found to be 0.062. Therefore, although each of the variables was considered statistically significant, the overall contribution of these three variables was small.

In regards to position, neither the Spearman's correlation nor the multiple regression found position to be a significant factor in level of physical activity. This was inconsistent with previous research that found staff jobs, such as facilities management and housekeeping, to be more physically active (Fountaine et al., 2014). These results could have been due to the methods of analysis utilized in this study. With the exception of professors, no other position had enough participants to permit comparable groups for analysis. As a result, participants employed in these

more active areas, such as facilities management, were grouped with other areas, for example administration. This could have potentially decreased the average physical activity level of facilities management and housekeeping, thereby skewing the results and minimizing the accuracy. Furthermore, future research needs to be conducted where individuals within these groups are purposefully oversampled, so that comparable analysis can be conducted and produce the most accurate results.

Gender was found to be a determining factor in engagement of physical activity. Although the Spearman's correlation analysis did not find a relationship between gender and physical activity, a relationship was seen in combination with social support and motivation in a multiple regression analysis. The multiple regression analysis showed that men engage in 0.371 more days of physical activity than their women counterparts. This is consistent with previous research findings that suggested men engage in more physical activity than women (Viciana et al., 2016; Kelly et al., 2016). This seems to be, in part, due to the intrinsic motivation that men have. In contrast, women are more motivated by recommendations explicitly outlined by health care providers (Daley & Duda, 2006; Lauderdale et al., 2015). Additionally, studies find that men usually possess more physically demanding jobs than their women counterparts (Platts et al., 2013). Therefore, this poses serious implications. Although neither men nor women in the faculty and staff at JMU are highly active, special efforts need to be made to encourage women to partake in physical activity on a more consistent basis. Perhaps, enlisting medical professionals to more frequently to address physical activity recommendations for women could achieve higher compliance with physical activity engagement. Additionally, despite the fact that men have higher levels of intrinsic motivation, efforts to increase self-motivation and self-efficacy could be beneficial to increase physical activity for both men and women. Therefore,

findings of the study are consistent with prior research; nevertheless, efforts need to be put in place to increase levels of physical activity for both men and women.

In regards to social support and level of physical activity, both the Pearson's correlation and multiple regression presented statistical significance between social support and physical activity. Those with more special support engaged in 0.298 more days of physical activity than those with less social support. This is consistent with previous research that higher levels of social support are associated with higher levels of physical activity, thereby demonstrating a positive correlational relationship (Koller de Paiva et al., 2016; Mohnsam da Silva et al., 2013). Additionally, many participants listed additional sources of social support, such as accountability groups and religious relationships. Further, 50.3 percent of participants agreed that having an accountability partner for social support would be beneficial. This was also consistent with previous research (Kahn et al., 2002). Therefore, social support was found to correlated with physical activity level, and the JMU faculty and staff population was representative of other university faculty and staff.

Finally, the relationship between motivation and level of physical activity was found to be significant, both in the Pearson's correlation and multiple regression. Those with motivation worked out 0.101 days more than their non-motivated counterparts. This is consistent with previous research, indicating that motivation increases physical activity level (Leininger et al., 2013; Ajibua et. al., 2013; VanSickle et al., 2010). Additionally, in the survey, 80 percent of participants agreed that potential university programs would motivate them to increase in physical activity. These programs included: personalized activities, such as Group Exercise classes designed specifically for faculty and staff; bike to work bi-weekly programs; opportunities to earn coupons and discounts by engaging in physical activity; and having a

campus-wide physical activity challenges. This poses implications and motivation for the university at large to initiate motives to engage in physical activity. If the university begins to offer these services and incentives, then JMU faculty and staff may increase their overall level of physical activity. Therefore, the JMU faculty and staff population is representative of other populations in regards to motivation, and instituting incentive programs for faculty and staff could increase this motivation.

Overall, the effect of gender, social support, and motivation was small, R^2=6.2%. This indicates that there are other variables that greatly account for level of physical activity. As mentioned in the introduction, diabetes negatively affects the level of one's physical activity (Kelly et al., 2016). Likewise, a participant noted in the study that those who have other debilitating conditions, such as difficulty walking, face even greater challenges when trying to participate in physical activity. Therefore, although gender, social support, and motivation are statistically significant predictors of physical activity, there are still many more variables that contribute to level of physical activity. As a result, research must be conducted to examine these other potential variables.

Limitations

There are several major limitations of the study. The first limitation regarded the fact that the researcher collected data through convenience sampling. The email was sent, in bulk, to the faculty and staff of JMU. However, there could have been a difference in who answered the survey. For example, more women than men responded to the study. This could have altered the results of the study, especially since men are typically more physically active (Viciana et al., 2016; Kelly et al., 2016). Therefore, the unequal distribution of men and women could have impacted the results of the study.

An additional limitation of the study was the potential for social desirability to influence the results. Studies have shown that individuals are likely to answer in such as way as to showcase themselves in a positive light. If an individual participates in such a survey, he or she may have said that he or she engaged in more physical activity than he or she truly does. The researcher tried to limit the occurrence of social desirability by presenting an anonymous survey. Thereby, participants were not worried that the results of the study could be traced back to the individual him or herself. (Neutens & Rubinson, 2014).

A third limitation was the issue of recall bias during the survey. Recall bias occurs when individuals unintentionally report incorrect information after time has elapsed (Neutens & Rubinson, 2014). Recall bias could have occurred unintentionally, as humans are subject to forget happenings of the past. The researcher attempted to limit this type of bias by limiting specific physical activity level questions to the last 7 days. Therefore, there was less time that had elapsed since the engagement in physical activity.

A final limitation of the study occurred due to the design of the survey and analysis. The issue arose when generating scores for moderate and physical activity. Because both moderate and vigorous physical activity were given the same scores, these overall scores may not have been true to the level of physical activity of each individual. Therefore, this discrepancy could have skewed the results of the study.

Suggestions for Future Research

In order to combat several discrepancies in the current study, the researcher recommends several changes in future studies. First, a more equal distribution of men and women would be beneficial to ensure comparable groups throughout analysis. Additionally, to better demonstrate level of physical activity, the researcher suggests that future research be conducted to analyze the

time spent in each category of physical activity. Third, in order to better evaluate the motivation of individuals, the researcher suggests that future research applies a theory to the study. Utilizing the Transtheoretical model, one could examine the progression between physical activity level and category within the model. Additionally, future research could incorporate constructs, such as self-efficacy from other models. By doing so, research could be more grounded in a theory and generate even more impactful results. Finally, because gender, social support, and motivation only demonstrate a small predicting relationship with engagement in physical activity, future research should examine the effects of other variables, such as comorbidity or commute to work, on physical activity. Therefore, future research should be conducted to address the discrepancies in the current study.

Conclusion

The current cross-sectional study examined the effect of gender, position, social support, and motivation on level of physical activity for the faculty and staff of James Madison University. The results of the study found that the interaction of social support, motivation, and gender influence engagement of physical activity. However, position, defined as faculty or staff, did not influence participation in physical activity. Further, the interaction of these variables only accounts for a small portion of the reasoning behind engaging in physical activity. Therefore, further research should be conducted to determine what other factors, such as presence of chronic diseases or commute to work, influence engagement in physical activity for university faculty and staff.

References

Ajibua, M. A., Olorunsola, H. K., & Alla, J. B. (2013). The challenges of workplace physical activity among employees of higher institutions in Ondo State, Nigeria. *Journal of Physical Education and Sport*, *13*(4), 612.

Bird, M., Shing, C., Mainsbridge, C., Cooley, D., & Pedersen, S. (2015). Activity behaviors of university staff in the workplace: A pilot study. *Journal of Physical Activity & Health*, *12*(8), 1128-1132.

Centers for Disease Control and Prevention (2015). How much physical activity do adults need*?* Retrieved from http://www.cdc.gov/physicalactivity/basics/adults/index.htm

Daley, A. J., & Duda, J. L. (2006). Self-determination, stage of readiness to change for exercise, and frequency of physical activity in young people. *European Journal Of Sport Science*, *6*(4), 231-243.

Fountaine, C. J., Piacentini, M., & Liguori, G. A. (2014). Occupational sitting and physical activity among university employees. *International Journal of Exercise Science, 7(*4*),* 295-301.

Gore, S. (1973). The influence of social support and related variables in ameliorating the consequence of job loss. Unpublished doctoral dissertation, University of Texas at Austin.

Haines, D., Davis, L., Rancour, P., Robinson, M., Neel-Wilson, T., & Wagner, S. (2007). A pilot intervention to promote walking and wellness and to improve the health of college faculty and staff. *Journal of American College Health*, *55*(4), 219-225.

Kahn, E.B., Ramsey, L.T., Brownson, R.C., Health, G.W., Howze, E.H., Powell, K.E., Stone, E.J., Rajab, M.W., & Corso, P. (2002). The effectiveness of interventions to increase physical activity. A systematic review. *Am J Prev Med*, 22(4), 73-107.

Kelly, J., Edney, K., Moran, C., Srikanth, V., & Callisaya, M. (2016). Gender differences in physical activity levels of older people with type 2 Diabetes Mellitus. *Journal Of Physical Activity & Health*, *13*(4), 409-415.

Koller de Paiva, H., de Camargo, É. M., de Paula da Silva, A. A., & Siqueira Reis, R. (2016). Association between intention for physical activity practice, social support and physical activity. /Associação entre intenção para prática de atividade física, apoio social e atividade física. *Brazilian Journal Of Kineanthropometry & Human Performance*, *18*(6), 667-677.

Lauderdale, M. E., Yli-Piipari, S., Irwin, C. C., & Layne, T. E. (2015). Gender differences regarding motivation for physical activity among college students: A Self-Determination Approach. *Physical Educator*, *72*153-172.

Leininger, L. J., Harris, D., Tracz, S., & Marshall, J. E. (2013). Differences in physical activity participation between university employees with and without a worksite health promotion program. *Californian Journal of Health Promotion*, *11*(1), 67-75.

Mohnsam da Silva, I. C., Azevedo, M. R., & Gonçalves, H. (2013). Leisure-time physical activity and social support among Brazilian adults. *Journal Of Physical Activity & Health*, *10*(6), 871-879.

Motivation. (n.d.). Retrieved from https://www.merriam-webster.com/dictionary/motivation

Neutens, J. J., & Rubinson, L. (2014). Research techniques for the Health Sciences (5th ed.). San Francisco, CA: Pearson Benjamin Cummings.

Position. (n.d.) retrieved from https://www.merriam-webster.com/dictionary/position

Platts, L. G., Netuveli, G., Webb, E., Zins, M., Goldberg, M., Blane, D., & Wahrendorf, M. (2013). Physical occupational exposures during working life and quality of life after labour market exit: results from the GAZEL study. *Aging & Mental Health*, *17*(6), 697-706. doi:10.1080/13607863.2013.781120

Turkmen, M., Ozkan, A., Murat, K. U. L., & Bozkus, T. (2015). Investigation of the relationship between physical activity level and healthy life-style behaviors of academic staff. *Educational Research and Reviews*, *10*(5), 577-581.

VanSickle, J., Hancher-Rauch, H., & Hicks, L. (2010). Designing a university-wide fitness program to promote campus health and department Image. *Journal of Physical Education, Recreation & Dance (JOPERD)*, *81*(1), 27-32.

Viciana, J., Mayorga-Vega, D., & Martínez-Baena, A. (2016). Moderate-to-vigorous physical activity levels in physical education, school recess, and after-school time: Influence of gender, age, and weight Status. *Journal Of Physical Activity & Health*, *13*(10), 1117-1123.

World Health Organization (2017). Physical activity. Retrieved from http://www.who.int/mediacentre/factsheets/fs385/en/

Table 1. Demographic Characteristics (n = 418)

Characteristic	n	%
Gender		
Man	181	46.5
Woman	205	52.7
Race/Ethnicitv		
African-American	2	0.5
Caucasian	391	93.5
Mexican-American	2	0.5
Asian-American	3	0.7
Hispanic	5	1.2
I prefer not to answer	8	1.9
Other	7	1.5
Position		
Faculty	213	51.2
Staff	204	48.8
Income		
$10.000-$29.999	2	0.55
$20,000-$29,999	8	11.9
$30,000-$39,999	29	6.9
$40,000-$49,999	15	3.6
$50,000-$59,999	28	6.7
$60,000-$69,999	33	7.9
$70,000-$79,999	26	6.2
$80,000-$89,999	38	9.1
$90,000-$99,999	32	7.7
$100,000-$149,999	115	27.5
$150.000 or more	48	11.5
Prefer not to answer	44	10.5

Table 2. Descriptive analysis of variables gender and position on physical activity

	N	Mean	Std. Dev	Range
PHYSICAL ACTIVITY				
GENDER				
Man	137	2.978	1.857	0-8
Woman	281	2.683	1.631	0-8
POSITION				
Faculty	204	2.922	1.777	0-8
Staff	219	2.653	1.640	0-8

Table 3. Correlational data for gender, position, social support, and motivation on physical activity level.

Variable	PA	Gender	Position	Social Support	Motivation
SPEARMAN'S					
Gender	-0.76	1.000	0.143	0.137	0.092
Position	-0.70	0.143	1.000	0.065	0.082
PEARSON'S					
Social Support	1.88*	0.138	0.049	1.000	0.297
Motivation	1.40*	0.095	0.078	0.297	1.000

Note: PA=Physical Activity; * $p < 0.01$

Table 4. Regression data

Variable	*B*	SE_B	β
Intercept	2.271	0.242	
Gender	-0.371	0.177	-0.102*
Position	-0.277	0.165	-0.081
Social Support	0.298	0.085	0.176*
Motivation	0.101	0.049	0.104*

Note: * $p < 0.05$; B= unstandardized regression coefficient; SE_B- standard error of the coefficient; and β = standardized coefficient.

Appendices

Appendix A: Bulk Email sent to the Faculty and Staff or James Madison University

Dear Faculty or Staff member of James Madison University,

My name is Julianna DeTrane, and I am a senior Health Sciences major in the Honors College at James Madison University. For my senior honors project, I am conducting a study concerning the levels of physical activity in JMU faculty and staff. Your participation would be greatly appreciated. The survey will require less than 10 minutes of your time. The link to the survey is below. The survey will close on January 27, 2017.

Consent to Participate in Research

Identification of Investigators & Purpose of Study

You are being asked to participate in a research study conducted by Julianna DeTrane and Dr. Audrey Burnett from James Madison University. The purpose of this study is to examine the effects of position/socioeconomic status, social support, and department position on the frequency of physical activity of university faculty and staff. This study will contribute to the researcher's completion of her senior honors thesis.

Research Procedures

Should you decide to participate in this research study, clicking on the survey URL and completing the survey will indicate consent. This study consists of an online survey that will be administered to individual participants in through email. You will be asked to provide answers to a series of questions related to the effects of socioeconomic status/position, social support, and department profession on the frequency of physical activity.

Time Required

Participation in this study will require less than 10 minutes of your time

Risks

A potential risk that the investigator perceives as a minimal threat to participants is embarrassment in current level of physical activity. However, the names of the survey participants will remain anonymous to the researcher. Additionally, all data will only be referred to in aggregate forms, further maintaining the confidentiality of the participant.

Benefits

While there are not direct benefits for the participants of this study, participation in this study will contribute to research on health habits of university faculty and staff. It will contribute to James Madison University research as a whole and could impact future health initiatives to benefit faculty and staff at James Madison University.

Confidentiality

The results of this research will be presented at an honors symposium in the spring of 2017 and submitted to the *Journal Of Physical Activity & Health*. The results of this project will be coded in such a way that the respondent's identity will not be attached to the final form of this study. The researcher retains the right to use and publish non-identifiable data. While individual responses are confidential, aggregate data will be presented representing averages, generalizations, and trends about the responses as a whole. All data will be stored in a secure location accessible only to the researcher and her advisors. Upon completion of the study, all information that matches up individual respondents with their answers will be destroyed.

Participation & Withdrawal

Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind.

Questions about the Study

If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Julianna DeTrane
Department of Health Sciences
James Madison University
detranjm@dukes.jmu.edu

Dr. Audrey Burnett
Department of Health Sciences
James Madison University
Telephone: 540-568-8969
burnea@jmu.edu

Questions about Your Rights as a Research Subject

Dr. David Cockley
Chair, Institutional Review Board
James Madison University
(540) 568-2834
cocklede@jmu.edu

Giving of Consent

I have read this consent form and I understand what is being requested of me as a participant in this study. I freely consent to participate. I certify that I am at least 18 years of age. By clicking on the link below, and completing and submitting this anonymous survey, I am consenting to participate in this research.

https://surveyplanet.com/582d296fd1a29067d47ee91e

Julianna DeTrane 1/18/2017

Audrey Burnett 1/18/2017

This study has been approved by the IRB, protocol # 17-0283

Thank you for your time.

Sincerely,

Julianna Marie DeTrane

Appendix B: Survey Questions

1. What gender do you most closely identify with?

    O Man

    O Woman

    O Other (please specify)

2. Please select your age group:

    O Less than 18 years old

    O 18-24 years old

    O 25-34 years old

    O 35-44 years old

    O 45-54 years old

    O 55-64 years old

    O 65-74 years old

    O 75 years old and above

3. What race do you identify yourself as?

    O African-American

    O American Indian

    O Caucasian

    O Mexican-American

    O Asian-American

    O Hispanic

    O I prefer not to answer

    O Other

4. How much did your household earn in total for the most recent tax year?

    O Less than $10,000

    O $10,000-$19,999

    O $20,000-$29,999

    O $30,000-$39,999

    O $40,000-$49,999

    O $50,000-$59,999

    O $60,000-$69,999

O $70,000-$79,999

O $80,000-$89,999

O $90,000-$99,999

O $100,000-$149,999

O $150,000 or more

O I prefer not to answer

5. How many years have you been employed by JMU?

O Prefer not to answer

O Please write months/years below

6. What is your position at James Madison University?

O Professors

O Dining Services

O Adjunct faculty

O Information technology

O Housing

O Urec/Athletic Training

O Administrative

O Advisor

O Facilities Management

O Other (please specify)

7. What is your current department of employment (ex: Health Sciences, Psychology, History, etc.)?

O I am not in a particular department

O I am part of the specified department written below

8. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, heavy construction, or climbing up stairs as part of your work? Think about only those physical activities that you did for at least 10 minutes at a time.

O No vigorous job related activity

O 1-3 days

O 4-7 days

9. How much time did you usually spend on one of those days doing vigorous physical activities as part of your work?

    O Answered no to previous question

    O Please write in minutes/hours below

10. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads as part of your work? Please do not include walking.

    O No vigorous job related activity

    O 1-3 days

    O 4-7 days

11. How much time did you usually spend on one of those days doing moderate physical activities as part of your work?

    O Answered no to previous question

    O Please write in minutes/hours below

12. During the last 7 days, on how many days did you walk for at least 10 minutes at a time as part of your work? Please do not count any walking you did to travel to or from work.

    O No job related walking

    O 1-3 days

    O 4-7 days

13. How much time did you usually spend on one of those days walking as part of your work?

    O Answered no to previous question

    O Please write in minutes/hours below

14. During the last 7 days, on how many days did you travel in a motor vehicle like a train, bus, car, or tram?

    O No traveling in motor vehicle

    O 1-3 days

    O 4-7 days

15. How much time did you usually spend on one of those days traveling in a train, bus, car, tram, or other kind of motor vehicle?

    O Answered no to previous question

O Please write in minutes/hours below

16. Now think only about the bicycling you might have done to travel to and from work, to do errands, or to go from place to place. During the last 7 days, on how many days did you bicycle for at least 10 minutes at a time to go from place to place?

    O No bicycling from place to place

    O 1-3 days

    O 4-7 days

17. How much time did you usually spend on one of those days to bicycle from place to place?

    O Answered no to previous question

    O Please write in minutes/hours below

18. Now think only about the walking you might have done to travel to and from work, to do errands, or to go from place to place. During the last 7 days, on how many days did you walk for at least 10 minutes at a time to go from place to place?

    O No walking from place to place

    O 1-3 days

    O 4-7 days

19. How much time did you usually spend on one of those days walking from place to place?

    O Answered no to previous question

    O Please write in minutes/hours below

20. Think about only those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do vigorous physical activities around the house or during your leisure time (ex: heavy lifting, chopping wood, shoveling snow, or running)?

    O No vigorous physical activities around the house or during leisure time

    O 1-3 days

    O 4-7 days

21. How much time did you usually spend on one of those days doing vigorous physical activities at home or during your leisure time?

    O Answered no to previous answer

    O Please write in minutes/hours below

22. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do moderate physical activities at home or during leisure time (ex: carrying light loads, sweeping, washing windows, and swimming at a regular pace)?

    O No moderate physical activities around the house or during leisure time

    O 1-3 days

    O 4-7 days

23. How much time did you usually spend on one of those days doing moderate physical activities at home or during your leisure time?

    O Answered no to previous question

    O Please write in minutes/hours below

24. Not counting any walking you have already mentioned, during the last 7 days, on how many days did you walk for at least 10 minutes at a time at home or during your leisure time?

    O No walking

    O 1-3 days

    O 4-7 days

25. How much time did you usually spend on one of those days walking in your leisure time?

    O Answered no to previous question

    O Please write in minutes/hours below

26. The last questions are about the time you spend sitting while at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television. Do not include any time spent sitting in a motor vehicle that you have already told me about. During the last 7 days, how much time did you usually spend sitting on a weekday?

    O Prefer not to answer

    O Please write in minutes/hours below

27. During the last 7 days, how much time did you usually spend sitting on a weekend day?

    O Prefer not to answer

    O Please write in minutes/hours below

28. From which group do you receive social support and motivation to engage in physical activity?

    O Family

    O Friends

    O Peers

    O Employers

    O Other (please specify)

29. I want to increase my overall level of physical activity.

    O Strongly disagree

    O Disagree

    O Neutral

    O Agree

    O strongly agree

30. In the last 7 days, I have felt excited to engage in physical activity.

    O Strongly disagree

    O Disagree

    O Neutral

    O Agree

    O Strongly agree

31. In the last 7 days, I have felt motivated to engage in physical activity.

    O Strongly disagree

    O Disagree

    O Neutral

    O Agree

    O Strongly agree

32. In the last year, I have considered increasing my level of physical activity.

    O Never

    O Rarely

    O Sometimes

    O Frequently

    O Daily

O I recently started increasing my level of physical activity

O I have already increased my level of physical activity in the last year

33. If I was assigned a workout or accountability partner, I would be more motivated and compelled to engage in physical activity.

O Strongly disagree

O Disagree

O Neutral

O Agree

O Strongly agree

34. What would make you more excited and compelled to engage in physical activity (Check all that apply)

O Personalized activities such as Group Exercise class for Faculty/Staff

O Bike to work bi-weekly programs

O Awarded coupons and discounts based on physical activity

O Campus-wide physical activity challenges (IT would start on a department/area level basis, and then become a college-wide competition, and finally end as a university-wide competition. IT would be based on a point system with the top three individuals either moving on to the next level or winning a prize.