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DNP Project Active Anson

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DNP Project Active Anson

Melissa Chanel Griffin

A project submitted to the faculty of
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Doctor of Nursing Practice

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“If it doesn’t challenge you, it won’t change you.” – Fred DeVito

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with this. the past three years was the hardest race of my life but, as it coming to an end, I realize it is only just the beginning, the real race is about to start.

Hebrews 12:1 *“let us through off everything that hinders and the sin that so easily entangles. And let us run with perseverance the race marked out for us.”*

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Objectives: To implement and evaluate the effectiveness of using a mobile app to encourage hospital workers to increase their physical activity.

Methods: Project was open and advertised to all hospital employees in a small rural community hospital in the south-eastern United States through flyers, bulletin boards, emails, banners and in-person registration assistance. Registered participants completed a 30-day walking challenge and recorded their daily step counts. Participants received a gift bag with fitness items such as water bottles. The three highest step count participants were awarded prizes. Weekly prize drawings were conducted for participants with 10,000 steps per day. Post challenge participants were asked to answer an “End Challenge Survey.” Outcome data was collected from (N=57) participants.

Results: Project implementation which began on the first Monday after the New Year holiday, was successful as participants did increase their physical activity. Many participants expressed enjoyment with the friendly competition and noted it inspired them to be more active, even during work shifts. Participants noted feeling improved health and well-being, with some participants recording improved blood pressure scores. Participants shared they would continue to use and encourage others to use the mobile app to boost physical activity. Yet, participants did not report significant improvements in sleep quality or levels of stress.

Conclusions: While many healthcare employees are often challenged by limited time and lack of energy to participate in physical exercise due to work requirements, fun competitive comradery fitness applications are rising as a solution to encourage physical activities. As a result, more individuals may change their perceptions towards physical activity by using this in business and organizations

Introduction

In modern society, sedentary lifestyles are increasing at a rapidly rate while engagement in routine physical activities is decreasing. The increase in sedentary activity can be attributed to many factors, including lack of available spaces for exercise, increased occupational behaviours such as computer-based office work, growth in binge watching streaming video services, such as Netflix, or increased social media use as Tiktok.¹ Research reveals that over time, public spaces, homes, schools and offices are being engineered to be more efficient and minimize human movement over time, where people move less and sit more. In the workplace, most workers only require electronic devices such as a computer, a power source, and overhead lighting to undertake their work, leading to sitting at a desk.¹ Researchers have found that among the American adult population, the mean daily duration of a sedentary habits is estimated at 7.7 hours, whereas the duration is higher among the Korean adult population at 8.3 hours.¹ The British Heart Foundation (BHF) found that adults, of working age, average 9.5 hours of sedentary behaviour daily, and by age 65-74, the sedentary time increases to 10 hours per day or more.² Individuals age 75 and above, were found to have sedentary time increasing to more than 11 hours per day for UK adults.² Therefore, this data reveals and supports the need for increased physical activity in adults throughout their waking hours and workday.

Sedentary lifestyles are also increasing among children and young adults as most of their leisure time is spent watching television, playing video games or using computers.³ Implications of increased sedentary lifestyles among children, adolescents and older adults reveal the potential to contribute to a significant public health issue

increasing obesity rates, developing of cardiovascular diseases, diabetes and even early death.⁴ Park et al. identified that sedentary behaviour decreases systemic blood flow and cardiac output while also reducing the activity of lipoprotein lipase, protein transporter activity, carbohydrate metabolism and insulin sensitivity.¹ As a result, individuals who lead sedentary lifestyles are at risk of different cancers, metabolic disorders including diabetes mellitus and hypertension, and musculoskeletal disorders such as osteoporosis and arthralgia. In addition to the development of metabolic and musculoskeletal diseases, research also shows that prolonged sitting or sedentary lifestyles also lead to increased cardiovascular disease (CVD) mortality, where up to 1,644 deaths were reported among sampled 149,077 participants due to the diseases.⁵

Given the increased prevalence of sedentary lifestyles, diverse strategies to address the public health sequelae and reverse the potential long-term health effects are necessary. Various strategies from multiple disciplines in the private and public sector will be necessary to increase awareness and create more active lifestyles. One such evidence-based strategy encourages the population to engage in physical activities regularly as it lowers the risks of developing major cardiovascular and metabolic diseases, muscular weakness, obesity and cognitive impairments.⁶ Research also indicates that by engaging in physical activity, individuals could improve their mental health conditions.⁷ A variety of physical activities were recommended including cycling, running, body-weight exercises, and strength training to improve cardiovascular health. Researchers have also recommended that individuals reduce the time spent being sedentary by taking walks during breaks, walking to work, taking the stairs instead of using elevators and setting reminders to stand up while working at the desk for prolonged

hours.⁸ In this perspective, there is a shift from viewing physical activities as only including intensive and brisk actions such as running, cycling, and going to the gym and considering more basic modalities. Simple physical activities that can be completed quickly during the workday such as walking during breaks and standing periodically at the work desk were found to have positive impact.

Despite the proven benefits of increased physical activity on the population's health outcomes,, a reported challenge is that many individuals give up early or lose interest in continued engagement in the activities. The discontinuation of physical activity may be due to many factors including negligence, lack of free time and prolonged work hours.⁹ In other instances, individuals are reported to have little to no interest in physical activity, which hinders their participation in such tasks.¹⁰ For individuals employed in the healthcare setting, long work hours have been shown to prevent participation in physical activity. This translates into a high risk of cardiovascular diseases, diabetes, injuries, and musculoskeletal disorders.¹¹ For many healthcare employees working extended shifts, it may be dark outside before work and dark outside after work. A reasonable explanation for the reduced interest in engaging in physical activities among healthcare workers may also be that the long hours, 12 or more hours, squashes any interest or energy to engage in intense physical activities, including cycling or running. Similarly, healthcare workers may lose interest over time because they finding physical activities boring or lack the ongoing motivation to engage in long-term activities requiring discipline and high frequency.

Evidence shows that specific interventions are recommended for healthcare employees working long hours to encourage participation in physical activity. One

specific intervention that has demonstrated success is the gamification of physical activities for individual or group activity. Findings reveal that more individuals gain interest in physical activities after interacting with fun competitive interventions.¹² Gamification, which describes using game contexts in non-game contexts, has emerged as a promising avenue to encourage more people to engage in physical activities. Tu et al. found that many developers gamify fitness apps, improving workouts by making them more enjoyable, such as walking for likes by game community members.¹³ Gamification has also been found to help attract and satisfy users in large markets.¹⁴ By gamifying physical activities, participants are observed to increase their interest in activities and encourage each other to successfully complete different tasks.

Since research on the implementation of physical activities via fitness apps is in the early stages, the focus of this doctoral project was to measure the effectiveness of a mobile fitness app in encouraging hospital workers to engage in physical activity and increase their step count daily. The project's was to highlight the importance of implementing an effective intervention strategy such as using of a mobile app to promote physical activity among employees within hospital environments and measure its impact. Project outcomes may also demonstrate support for the role of gamification in encouraging active lifestyles among hospital workers who were often challenged by limited time to undertake physical activity. In addition, project outcome data could be used to identify and outline actionable recommendations guiding other individuals to adopt mobile apps as an intervention for improving participation in daily physical activities.

Methodology

Research Focus

The project was designed as translational research evidence-based practice intervention. Project outcomes explored whether gamification through mobile apps could be used as a positive intervention strategy to motivate hospital workers to increase their physical activities. The project outcome data also explored if mobile app utilization would positively influence stress levels, sleep quality, physical activity, and health and well-being among hospital employee participants.

Study Population

All hospital employees (N =150), regardless of age, sex, health status, or job position, were invited to volunteer to participate in this project which consisted of a 30-day walking challenge. Participants were asked to download a mobile app to track the number of steps they completed daily. Each day a participant completed 10,000 steps or more, their name was entered into a prize drawing to increase short-term motivation and competition among participants. In addition, the top three participants with the highest number of recorded steps each week were also awarded gift cards. The project was centred on gamification, where participants who completed the highest number of steps could win more prizes. Participants who preferred to remain anonymous or objected to using mobile app were allowed to track their step count using a pedometer and written record of steps. No steps data was collected from the participants that did not use the app to track steps or participated anonymously. Mobile app participation was voluntary. One hundred fifty employees received an email invitation. of those (N= 150) invitations, but only 94, (63%) people open the email and responded to the informed consent question and 57 (38%) hospital employees participated in the step challenge using the mobile app

with 57 downloading and using the mobile app to track their step count while some participants in the survey option only or survey option with printable facility step counter form and with the option to submit.

Sampling

All individuals working in the healthcare facility were sent an invitation to participate by email. The email included information on the project, informed consent, and instructions on next steps if they were interested in participating. If participants agreed, they were instructed to download the mobile app used to record steps. The initial targeted working population of the hospital's 150 employees, including but not limited to certified nursing assistants, administration specialists, radiologists, registered nurses, dietary specialists, registration, and security personnel, received email invitations with 57 employees agreeing to participate in the step challenge portion of the project.

Data Collection and Analysis

A mobile app or pedometer with written record was utilized to collect daily step count throughout the 30-day challenge. Before beginning the challenge, participants were asked to estimate average number of daily steps. An additional data collection instrument in the form of a participant questionnaire survey was utilized to collect both quantitative and qualitative data from each participant. The survey aimed to assess the participants' perceptions of whether the mobile app worked as a positive intervention strategy to facilitate increased physical activity. The questionnaire was distributed via email, with informed consent, and asked participants to complete the Qualtrics Survey questionnaire survey at their convenience. Collected data from the participant survey was analyzed using a Qualtrics that created data into summarized bar charts.

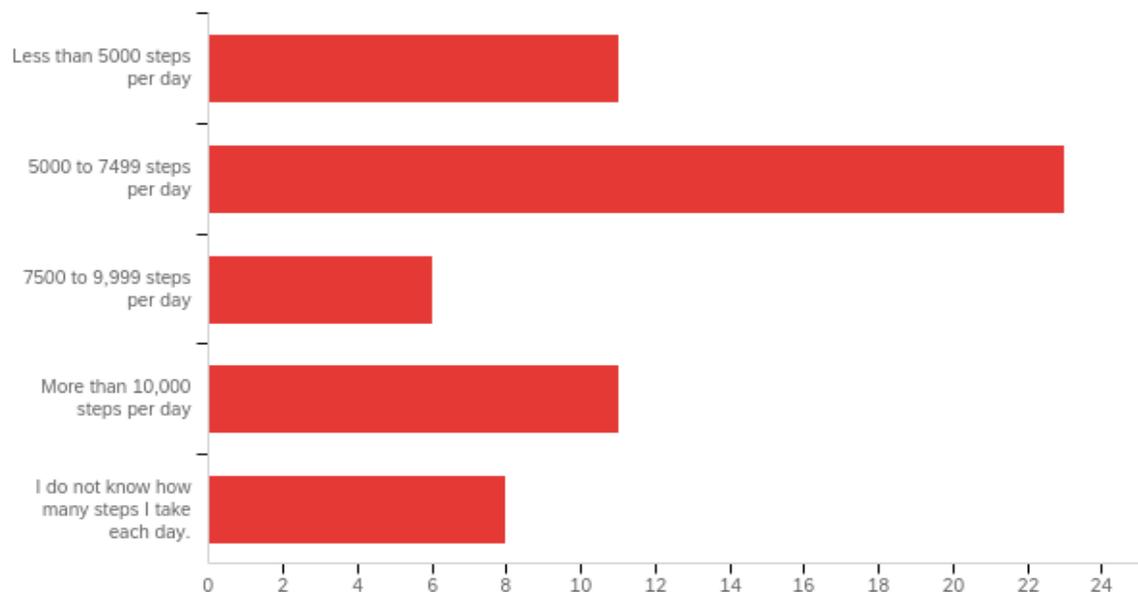


Figure 1. Average Number of Step

Results

Of the 150 healthcare employees that were invited, (N= 57) participated in the step challenge using the app. On invitation survey *Figure 1* resulted of average step prior to the challenge. Results indicated that eleven (18.64%) averaged less than 5,000 steps daily, while twenty-three (38.98 %) walked 5000 to 7499 steps per day. Also, six (10.17%) made 7500 to 9,9999 steps a day, eleven (18.64%) made more than 10,000 steps per day and thirteen (56%) did not know how many steps they took each day. Data analysis of the post survey questionnaire revealed a response rate of 42 results list in table 1. The project leader developed the post-challenge survey questionnaire and reviewed for face validity by the project chair and practice partners.

Post challenge survey item one measured whether participants noted an increase in their physical activity at work throughout of the challenge. Analysis revealed 47 of the participants experienced a positive increase in physical activity while at work (27%), were unsure or neutral and another 27% did not feel an increase in physical activity

during the challenge. Based on 46 % of participants who reported a definite increase, it was concluded that the 30-day challenge was influential in increasing physical activities via walking, at the workplace.

Post challenge survey item two measured participant increase in physical activity at home during participation in the 30-day walking challenge. Survey results once again indicated a higher percentage of respondents reported the challenge promoted an increase in physical activity at home with (39%) of participants reporting a positive increase, (37%) reporting neutral or unsure and (24%) stating they did not find an increase in physical activity at home during the challenge.

Based on post-challenge survey items one and two, participation in the challenge led to increased physical activity both at home and in the workplace and, therefore, could be considered an effective intervention to promote health for hospital employees. Additionally, since employees could easily follow the challenge both at home and the workplace, it can be considered adequately suited to diverse environments instead of limited only to the professional workplace.

Post challenge survey item number three demonstrated respondents believed this walking challenge had increased their awareness or knowledge of the benefits of regular physical activity. 51% of respondents stated they noted an increase in awareness and knowledge while 29% were unsure or neutral and another 20% experienced no increase in knowledge or awareness of the benefits of regular physical activity. Therefore, the results imply that the application of a walking challenge is not only successful at encouraging employees to undertake increased physical activities, but it also promotes increased knowledge and awareness of the benefits of regularly engaging in physical

activity. Such insights may also suggest that fitness app developers could enhance their products by sharing knowledge tips on the benefits of physical fitness to motivate users and promote its continued use.

Post challenge survey item five asked respondents if the walking challenge had changed their opinion on the importance of regular physical activity. The results revealed 51% of the participants found their opinions had positively changed regarding the importance of physical activity compared with 37% who were unsure or neutral and the remainder choosing not to answer. The high percentage of positive responses indicates the 30-day challenge was influential in generating knowledge and changing perceptions regarding the importance of increased physical activity for improved health outcomes.

The outcome data analysis also explored whether engagement in physical activity would lead to improved sleep quality from participation in the challenge. Analysis of respondent data to item number five revealed 46% did not experience improved sleep quality while 22% reported unsure / neutral and only 32% reported an improvement in their sleep quality during the challenge. Theoretically physical activity was argued to enhance sleep quality; however, most participants in this project challenge reported they experienced little to no improvement in their sleep quality. Therefore, the challenge revealed there was a contradiction between previous studies insights of improved sleep quality by increasing the number of physical activities undertaken on a regularly.

Also, item number 7 on the post-challenge survey asked whether respondents experienced any stress reduction from increased physical activity during the challenge. Findings revealed more respondents, 44%, felt there had been no decrease in stress levels while 21% were neutral / unsure and only 32% reported a decrease in stress levels during

the walking challenge, while 24% were unsure or neutral. These results indicate that participants did not consider the increase in physical activity from the challenge to impact their stress levels nor influence their sleep quality.

Item number eight on the post-challenge survey asked whether participation impacted their overall feeling of well-being. Findings revealed that many respondents, 59%, reported an increase in an overall feeling of well-being after taking part in the walking challenge. Therefore, these findings indicate that an increase in physical activity positively impacted and boosted the participant's overall feelings of well-being despite failing to improve sleep quality and/or manage stress.

<i>Item Number</i>	% Positive Impact	% Neutral Impact	% Negative Impact
1	45%	26 %	29%
2	38%	36%	26%
3	50%	29%	21%
4	50%	36 %	14%
5	32%	22%	46%
6	32%	24%	44%
7	59%	24%	17%
8	76 %	15%	9%

Table 1 Post Challenge Survey Results from February 2022 Total (N=42)

Participants were asked to identify the main factors that preventing or limiting them from being physically active. Participants were offered a list of several categories to choose from. The categories of limiting or preventing factors included an option for a limited time, lack of energy, fear of injury, limited desire to exercise, or no limiting factors. The last item option was the “other” category where respondents were allowed

to enter free text of limiting factors, they felt had an impacted on their ability to participate fully. The results from this question are summarized in Figure 1 below:

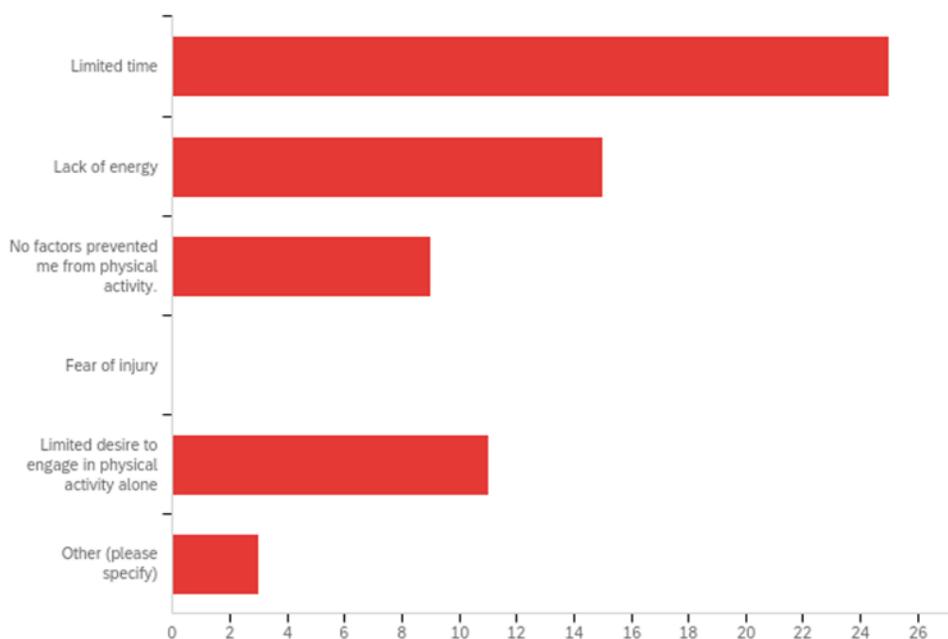


Figure 1. Factors challenging physical activity among respondents

Results indicate that (N=25, 39.68%) of respondents found a lack of time or limited time to be a significant limiting factor along with a lack of energy that affected (N=15, 23.81%) of respondents. Since all survey participants work in the healthcare industry, the implication that work-related responsibilities leave many healthcare employees with a feeling of too little time and energy for participation in physical activities can be made. However, it should also be noted that (N=11, 17.46%) of participants indicated the lack of, or limited, desire to engage in physical activity as a factor as well. Nevertheless, a few participants reported identifying the lack of energy and time as limiting factors in increasing physical activity, the need for positive interventions to improve the work schedules and workload of healthcare employees to increase engagement in physical activity can clearly be made.

With the need to seek positive intervention strategies to increase physical activity among healthcare workers firmly established in the literature, the questionnaire also asked respondents whether they enjoyed the walking challenge as a possible intervention strategy. Results of this post-challenge survey question revealed 97.56% of respondents reported a high level of enjoyment. This high percentage of positive responses suggests health app interventions, such as a walking challenge that utilizes a step-tracking app, have the potential to increase motivation and participation in physical activities in the future. The indication was that health app interventions that introduced gamification concepts such as competition and rewards are considered enjoyable; therefore, it can be suggested that participants would be more likely to engage using these interventions as possible solutions.

Additional evidence for gamification intervention as a method to increase physical activity can be found in the post-challenge survey question asking respondents if they plan to continue tracking their daily steps. Generated results are summarised in Figure 3 below.

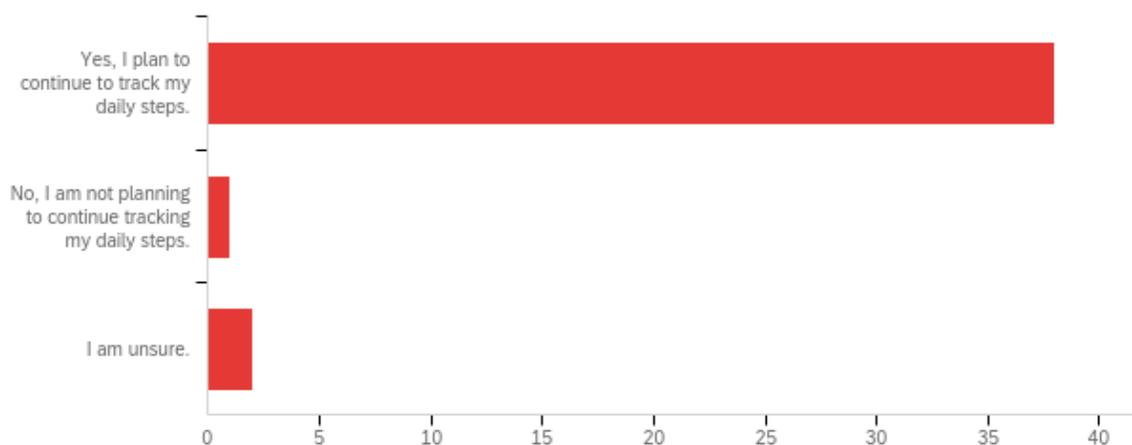


Figure 3 Willingness of participants to continue tracking daily steps

As demonstrated in Figure 2, most of the respondents (N=38,92.68%) were willing to continue tracking their daily steps in the future. The 30-day challenge suggests it may lead to long-lasting outcomes for the participants as they indicated their willingness to continue engaging and tracking their physical activities. The participants were also asked to indicate their willingness to recommend the challenge to their friends, and the results were once again positive with 76% of respondents willing to recommend the challenge to others. Based on these results, the inference can be made that participation in gamification challenges such as this walking challenge long-term engagement in physical activity for employees.

Finally, the participants were asked to identify additional improvements or possible changes that could be made to enhance the challenge and encourage physical activity among the Atrium Anson teammates. Analysis of the data revealed most participants enjoyed taking part in the challenge due to its competitiveness and team-oriented nature. As a result, the employees viewed the challenge as a practical idea for team building as they encouraged one another to undertake physical activities. However, the findings were also indicative of gamification of healthy activities as having the potential to motivate and enable more employees to enjoy engaging in physical activity which research has proven to have a positive impact on an individual's overall health positively.

Discussion and Conclusion

This evidence-based project aimed to increase physical activity among healthcare workers at a small rural hospital in the south-eastern United States. The outcome data measured the impact of mobile app health interventions on the physical activities of

hospital employees. Data analysis that adopting the mobile app solution via the 30-day challenge improved the physical activities undertaken both at home and in the workplace. Outcome data suggests that the gamification intervention encouraged participants to adopt the walking challenge and integrate and track physical activity within their daily routines. This finding resonated with previous research, which highlighting the impact of gamification on the uptake of fitness apps.¹⁴ Furthermore results also showed that participating in the challenge allowed most employees to increase their knowledge and awareness of the benefits of regular physical activity on health outcomes. Similarly, the findings between the walking challenge and previous literature suggest that gamified fitness apps are helpful interventions that encourage engagement in physical activity and facilitate learning about benefits of regular physical activity.

A second finding indicated that most participants in this sample, did not experience improvement in sleep quality or a reduced in stress levels, inconsistent with previous research. Results of this walking challenge were inconsistent with previous literature, which reported that individuals who engaged in physical activity had better mental health conditions than their counterparts who did not engage in the activities.⁷ The contradiction between the project outcomes and previous literature may be due to a limited number of participants (N=57), a short period (30 days) of intervention, and advanced tools to measure stress levels within the short duration of this study were not adopted. It is suggested that in future exploration of this topic, scholars may consider focusing specifically on the impact of physical activity on sleep quality and stress levels to address the contradictory findings.

The post-survey challenge respondents reported an improved overall feeling of well-being after participating in the research. The findings further indicated that participants enjoyed using the app and had improved health outcomes such as feeling more energized and reducing self-reported blood pressure. Such insights correlate with previous findings from literature where a positive impact of physical activity on improved health was recorded as individuals recorded lower risks of cardiovascular diseases and obesity.⁶ Therefore, the results of this project outcomes consistently support the benefits of engaging in physical activities as a positive intervention for improving health and well-being. In addition, a positive correlation between the association of gamification as a method of motivation for increased physical activity combined with the results of previous literature can be established as the use of the StrideKick mobile app was suggested to lead to the overall feeling of improvement in the health and well-being of hospital employees.

In conclusion, this evidence-based project revealed that a physical activity challenge, such as Active Anson, utilizing a fitness may be beneficial in improving health outcomes and reducing sedentary lifestyles. Further investigation is needed but initial findings suggest that individuals should be encouraged to participate in physical activities where they participate as a group instead of completing physical activity tasks on their own. The project outcomes suggest that more hospital workers consider fitness apps group-based intervention to boost their physical activities and health outcomes. Gamification challenges are also recommended as team-building activities where individuals, groups and/or employers can encourage one another to compete in teams or groups to complete additional physical activities. Findings also suggest that similar

interventions adoption may be beneficial in other work environments to enhance the effectiveness of such interventions. Additional investigation should also consider including knowledge tips within the fitness apps used to motivate and provide additional information to encourage perceptual changes in the quality and quantity of physical activity engagement that ultimately results in a healthier lifestyle.

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