



CALIFORNIA STATE UNIVERSITY
MONTEREY BAY

**Get Up and Move© (GUM©):
A Free Activity App that will Extend Your Life
or Your Money Back**

CAPSTONE RESEARCH/PROJECT PROPOSAL

Submitted in partial satisfaction of requirements of the degree of

MASTER OF SCIENCE
in
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Mark C. Angel
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Capstone Approvals:

Miguel Lara
Advisor Name

Signature

Date

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Get Up and Move: Executive Summary

The purpose of this research project is to determine if the “Get Up and Move (GUM)” program can reduce sedentary time in study subjects and improve their health and wellbeing. The GUM program includes a 1-hour knowledge and activity orientation (online asynchronous course), a mobile application for Android platforms to induce breaks during sedentary time, and a website for additional information and to facilitate activities for those who can’t access the mobile app. One of the principle elements in the GUM program and app is to convey the value of moving more frequently throughout the day. Research has shown that what matters most is not just the time committed to physical activity in any given day or week, but the intervals that break up sedentary time.

The research portion of this project is evaluative (both summative and formative), and also meant to answer the following key questions:

1. Once subjects are armed with the knowledge of the dangers of sitting, will they stop sitting so much?
2. Will subjects use the app or website to help them move more?
3. Once they are moving more, will they feel better?

These data will be collected over the summer and compiled, analyzed, and summarized by the end of the Fall 2021 term. The entire program will also be revised during that same period to reflect feedback from the beta test over the summer. If research proves the program is successful for the small summer cohort, a more expansive launch of the program will be undertaken in early 2022. Data will continue to be collected as the program expands and feedback will continue to be assessed and integrated into revisions of the program over time to improve the efficacy and reach of GUM and the app associated with the program.

Overview

“Sitting is the new smoking,” attributed Dr. James Levine of the Mayo Clinic, is now a popular catchphrase. In his 2014 interview with the L.A. Times, he went on to say: "Sitting is more dangerous than smoking, kills more people than HIV and is more treacherous than parachuting. We are sitting ourselves to death" (Macvean, 2014). Although determining which is worse has been debated, the comparison to smoking is apt because like smoking, people first choose to sit excessively, and then it becomes a life-long habit. Also like smoking, no matter how much exercise you do before or after long stints of sitting, it won't reverse all the damage done by hours of sitting every day. One might also say that sedentary behavior, like smoking, can be addictive since the more you sit, the harder it becomes to quit.

Sedentary behavior, especially when one is working out of the home, has become a significant topic of interest for public health and occupational health. It has been considered a global pandemic since 2012 (Guardian Media Newsroom, 2021). This development over the past few decades seems to have accompanied the growth and development of internet-based school and work, which keeps people at their desks and watching screens more than ever. Recent research has already shown that the COVID-19 pandemic has highlighted and greatly exacerbated this trend (Flanagan et al., 2021). And, evidence supports the assertion that mortality from COVID-19 is substantially increased by a sedentary lifestyle (Salgado-Aranda et al. 2021).

At the Healthy Living for Pandemic Event Protection (HL-PIVOT) Network, in Chicago, Illinois, Smirmaul et al. (2020) show that:

The coronavirus disease-2019 (COVID-19) pandemic containment and mitigation strategies may lead to excessive physical inactivity and sedentary behavior, drastically impacting cardiorespiratory fitness and overall health. It is urgent to safely find ways to sit less and move more.

Introduction

A preponderance of evidence shows that sitting too much contributes significantly to disease and is a cofactor in workplace injury. In fact, the World Health Organization (WHO) lists too much sitting as the fourth leading cause of non-communicable disease worldwide (2011). The theory that sitting too much is dangerous is well grounded in evidence presented in the literature review. As shown in Figure-1 below, the “Sitting Disease” is indeed prevalent and deadly. The theory that moving more throughout the day to break up bouts of sitting is also grounded in evidence from several studies. The research question in this paper is how does the GUM program fit into the equation?



Figure 1: The 'Sitting' Disease: Did COVID-19 Worsen Our Risk? (2021, January 25) Guardian Media Newsroom

Shuval et al. (2013) studied urban community residents to see what they thought about physical activity. The study established that people are generally well aware that more activity is good for them, but find there are many barriers to getting more activity, especially in the inner city. The purpose of this mixed research study is to produce a comprehensive and contextualized understanding of the problem of sedentary behavior, and how participating in the GUM orientation course using the GUM app and/or website may be part of the solution to reducing those barriers to more activity.

This research will begin with the launch of the beta test the GUM orientation course and app this summer. The orientation course is an introductory class that teaches participants about the dangers of sitting, and how to take advantage of the GUM program including the mobile app and website. Participants will complete an on-boarding preliminary questionnaire to establish a baseline of knowledge about what a sedentary lifestyle consists of, and what their pre-treatment activity levels are. Followup questionnaires will be used to determine if GUM users actually sit less and feel better after completing the orientation, and downloading and implementing the app in their daily lives. And finally, is GUM practical and sustainable over a longer term.

The orientation program will help users understand just what sedentary means, how many hours of sedentary behavior per day constitutes a sedentary lifestyle, and what happens when one is excessively sedentary. It will also inform users of the degree to which a sedentary lifestyle affects the individual's health, and its impact on workforce productivity and the health care system. Finally, the program will suggest what solutions have been studied to help prevent, and in some cases even reverse some of the damage done by sedentary behavior.

The Role of Instructional Design and Technology

Instructional technology (IT) is devoted to bringing about change in people. This is accomplished by providing them with access to evidence, motivation, demonstration, and other

effective forms of interventions in order to affect changes in behavior. IT can also target gaps in behavior that, once addressed, are intended to help people become more efficient, effective, healthy, happy, and productive among other things. The role of IT, with respect to the dangers of and interventions for sedentary work, includes but are not limited to:

- Identifying gaps that lead to a predominance of sedentary behavior;
- Designing and developing optimal interventions that address these gaps;
- Implementing effective solutions that decrease sedentary behavior; and,
- Evaluating the efficacy of said solutions.

Therefore, it is appropriate to select this topic... nay, this mission to help people break their sedentary habits, as a task worthy of the arts and crafts involved in instructional science and technology.

Review of Relevant Literature

A review of literature reveals that the sedentary behavior is not only a salient issue for world-wide public health (WHO, 2020), it is a serious economic concern (Carlson, 2015). The economic impact is not only direct, through medical costs for taking care of those who develop disease because of inactivity, it has many indirect impacts like days absent from work, health insurance costs, productivity declines, morale issues, and workplace injuries to mention a few (Buckley, 2015).

Sitting not only contributes to all-cause mortality rates in many categories, it is in itself considered a leading cause of death in the world. The WHO (2011) identified physical inactivity as the fourth leading risk factory of global death after high blood pressure, smoking, and high glucose. And levels of physical inactivity at the time were rising in many countries. It is clear that a broad -spectrum solution is needed that can be easily distributed to a massive amount of people in a very short time to have a substantial and timely impact on this world-wide sedentary epidemic.

Carlson et al. (2018) reviewed data collected by the National Health Interview Survey (NHIS) including 67,762 non-disabled adults, over a 21-year period from 1990 to 2011. Out of 18,796 incidences of death recorded, Carlson et al., (2018) found:

Overall, 8.3% of deaths in nondisabled adults 25 or older were attributed to inadequate levels of physical activity. The percentage of deaths attributed to inadequate physical activity was significant for adults aged 40 to 69 (9.9%) and among adults aged 70 or older (7.8%).

Therefore, it seems that researchers must carefully consider whom they use for control groups in health-related studies. Because the “average healthy adult” is just one who doesn’t currently present with chronic or acute disease, it is necessary to seek out “active, healthy adults” as a control group for health-related studies to be more reliable, or at least be more specific about the control group’s health. In this study, the ‘control’ group will not consider activity levels. It will be random people who only take the preliminary survey.

Definition of Sedentary Behavior

In an article in the *British Journal of Sports Medicine* (Buckley 2015), an international group of experts offers guidance to employers on the dangers of maintaining a sedentary workforce. Based on evidence from long-term epidemiological and interventional studies of sedentary workers who were encouraged to stand and move more frequently, their recommendation is that, “Desk based workers should aim to initially progress towards accumulating 2 h/day of standing and light activity (light walking) during working hours, eventually progressing to a total accumulation of 4 h/day (prorated to part-time hours)” (Buckley, 2015). This expert recommendation went further to encourage employers to promote other healthier habits, and discourage dangerous habits with respect to diet, smoking, and stress. Encouraging simple and attainable behavioral changes in the habits of sedentary workers promotes a decrease in the risk of cardiometabolic diseases and premature mortality.

The challenge is not necessarily teaching people how to stand up and move more: it is to convince people that they need to move more. In fact, their very lives depend on simply getting their acetabulum out of their chair as much as possible. From a physical health perspective in the United States, “Americans spend the majority of their time in behaviors that expend very little energy (Matthews, 2003-2004).” At the time of Matthews’ study, only about half of non-sleeping sedentary time was attributed to media use. A recent study published by Flanagan et al. (2021) shows that COVID-19 has contributed significantly to an uptick in sedentary behavior, and that sedentary behavior itself is one of the many detrimental effects of the pandemic. As an expert in the field, I have observed that since the turn of this century, and especially since the pandemic took hold, there is even less activity among people I teach and interact with due to an increase in the time spent using media and other sedentary behaviors.

The Effects of Sedentariness

In a meta-analysis of 47 articles (selected from nearly 21,000 studies related to the topic), Biswas et al. (2015), found that there is a significant correlation between prolonged sedentary behavior and comorbidity factors for cardiovascular disease, diabetes, obesity, musculoskeletal disorders, and several other disabling conditions. Even considering publication biases, there is compelling evidence that sitting less than an hour at a time and fewer than four hours throughout the work-day (Buckley, 2015) significantly decreases associated comorbidity factors. Katzmarzyk et al. (2019) also showed “strong evidence that heightened amounts of sedentary behavior increases the risk for all-cause and cardiovascular disease mortality.” They also associate too much sitting with cancer, obesity, type-2 diabetes, and other diseases.

Additionally, after sitting for an hour or so, basal metabolic rate sinks to about 1-calorie per minute. By simply standing and changing posture while working at a desk, one can increase caloric

burn by up to 2-calories per minute through Non-Exercise Activity Thermogenesis (Levine, 2004).

Biswas (2015) concluded that exercising after work will not significantly mitigate or reverse the damage caused by sitting too much throughout the day. Therefore, just getting in the CDC (2020) and WHO (2020) recommendation for exercise in a week, or even that much in a day does not counteract all of the negative effects of sitting more than one hour at a time without getting up and moving a bit, or four or more hours in a day without movement every hour or so (Buckley, 2015).

Another study by Patel et al. (2018) took a new look at data collected on 127,554 people (free of initial chronic disease at the outset) between 1993 and 2014 to assess the impact of leisure time on all causes of mortality. This review showed that sedentary leisure time like playing video games, watching television, and reading for example, for over six hours a day as compared to less than three hours a day, led to nearly 20% increased likelihood of all causes of mortality related to, “higher risk of mortality from all causes, cardiovascular disease (including coronary heart disease and stroke-specific mortality), cancer, diabetes, kidney disease, suicide, chronic obstructive pulmonary disease, pneumonitis due to solids and liquids, liver, peptic ulcer and other digestive disease, Parkinson disease, Alzheimer disease, nervous disorders, and musculoskeletal disorders” (Patel et al. 2018).

Costs to Self and Society

Carlson et al. (2015) showed that “8.7% of aggregate health care expenditures were associated with inadequate physical activity” (Carlson, 2015). And, that getting people to be more active could result in a substantial decrease in health care expenditures in the United States and worldwide. The above statistics show that chronic sedentary behavior is at least 40 times more likely to kill a worker than the incidents of more-active workers dying from an injury in all the other dangerous jobs put together. Based on these numbers, sedentary behavior could be considered the fourth leading cause of death in the United States after heart disease, cancer, and COVID-19 (Bureau of Labor Statistics, US

Department of Labor, 2020). This also creates a significant financial burden on the health care system. The estimated costs directly related to sedentary behaviors in the United States is \$117 billion annually. This does not include indirect costs such as loss of productivity, or institutional costs from premature death and disability associated with illness and injury caused or made worse by inactivity (Carlson et al., 2015). A panel survey considering economic impact moderate to vigorous activity, conducted by Valero-Elizondo et al. (2012), shows that there is strong evidence that the health care expenditures and resource utilization decreases significantly for people who meet the CDC and WHO activity guidelines of at least 150 minutes per week.

In the United States alone, the number of people who spend more than four hours a day sitting at a desk is staggering. The harm this sedentary lifestyle causes those workers is well documented (Biswas et al., 2015). What makes it even worse is that many of those more sedentary people already have pre-existing conditions that make their circumstances even more dire and more difficult to overcome. In order to minimize that danger, it is necessary for them to move intentionally and more often throughout the day. According to van der Ploeg HP et al. (2012), regular exercise scattered throughout the day is much more effective in combating the dangers of sedentary behavior than clumping it together (i.e., going to the gym). “Prolonged sitting is a risk factor for all-cause mortality, independent of physical activity. Public health programs should focus on reducing sitting time in addition to increasing physical activity levels” (van der Ploeg et al., 2012).

According to the CDC’s Physical Activity Guidelines (CDC, 2020, p. 56), adults benefit from doing both aerobic and strengthening exercises throughout each week. Exercise doesn’t have to be something to dread. Beneficial physical activity is considered any behavior that gets the body moving. Therefore, getting people out of their desk chair to stand and move more while at work (even while conducting their business) is key to keeping people awake, focused, motivated, healthy, at work, and alive.

Not only is regular movement essential to one's general physical health, it is also immensely helpful to one's brain. One might argue that the most active part of a person who is primarily engaged in more sedentary types of work is their brain.

Benefits to the Brain from Mobilizing

According to Wendy Suzuki (2020), "Exercise is the most transformative thing you can do for your brain today." She gives three salient reasons in support of that statement:

1. Exercise immediately increases the amount of neurotransmitters, enhancing mood and a general sense of wellbeing.
2. Exercise increases attention and causes a lasting effect (more than two hours) on the ability to focus.
3. Exercise sharpens the mind's activity and improves one's reaction time.

Longer lasting effects of exercise on the brain over time include growing brain cells, which actually increase brain volume and long-term memory. There are also marked improvements in attention function, and longer lasting mood enhancing effects. One example of the protective effects of having a bigger, stronger, and faster pre-frontal lobe and hippocampus is that the brain can resist the onset of dementia and Alzheimer disease longer.

There is much consensus that exercise is indeed great for one's health. Again, what may surprise people is that just putting in an hour or so at the gym before or after work will do little to mitigate the deleterious effects of too much sustained sitting throughout the day (Biswas, 2015).

Promising Interventions That Address Sedentary Behavior

So how does one get people to change? How does one get people to get up and move throughout the day? A research review by Gardner et al. (2016) found that some interventions worked better than others with respect to successful changing people's habitual sedentary behavior. The most promising interventions were based on environmental restructuring (setting up a standing desk),

persuasion, and education to get people to be less sedentary. Gardner et al. (2016) takes a look at what could be considered instructional technology driven approaches to the solution for sitting too much. In the review, 26 studies were considered, investigating 38 different interventions. It was found that placing an emphasis on educating sedentary people as to the dangers of sedentary behavior was much more effective than just focusing on generally encouraging them to increase their exercise. This study focused on trying to find the most successful interventions and best practices for getting people on their feet and moving more often throughout the day.

Gardner et al. (2016) shows that the most promising interventions investigated include:

- self-monitoring of sedentary behaviors and exercise;
- problem solving activities that address sedentary behavior and movement;
- modifying social and physical environments in the work-place; and,
- giving subjects clear information as to the dangerous health impacts of too much sitting.

These results were similar to previous work identifying the use of standing desks and personalized advice as effective in reducing sedentary behavior (Shrestha et al., 2015).

Among the most commonly used techniques that worked to get people moving more were setting behavioral goals, providing social support, and utilizing activity monitors and sit-stand desks. Education, environmental restructuring, and enablement were often used with more success than trying to get people to exercise more. According to Gardner et al. (2016):

This suggests that intervention developers have tended to conceive of sedentary behaviour as largely determined by external environments, or as a self-regulatory problem, and that people would be willing to reduce their sedentary time if the environment were modified, or if supported in developing self-regulatory skills for sitting less.

Other studies have shown that it is even more effective to combine self-regulatory behavior change techniques than to use them independently (Dombrowski et al., 2012; Michie et al., 2009).

Solution

GUM is intended to help people move more, especially if they have desk work, spend a lot of time on screens, or tend to sit more than four hours in any given day. GUM is made up of six 5-minute sessions each illustrating a different kind of activity. Taken together, the segments amount to 30 minutes of mild to moderate exercise which is meant to be spread throughout a work day. If done in its entirety each day, in 5-minute sessions between bouts of sedentary activity five days a week, it will meet the Center for Disease Control and Prevention (CDC)'s minimum recommendation of 150 minutes of exercise a week (CDC, 2020). Of course, more exercise is better, and getting more aerobic and weight bearing exercises is also an important element.

GUM is a comprehensive lifestyle initiative that can be applied at many levels to help participants establish healthier habits and routines. Participants who complete the program will not only realize physical benefits from practicing the prescribed exercises, they will realize emotional and psychological growth as well. They may even begin to understand why the Taoist arts such as qigong and tai chi are not only physical and mental practices, but are also considered spiritual pursuits.

One of the benefits of basing the program on traditional Taoist teachings is that these practices and ideas have proven effective over time. The Qigong movements and concepts taught in this program are drawn from a mix of lineages, but are well established in Chinese traditions and texts. The supplemental exercises are based on physical therapy, structural kinesiology and traditional yoga asanas. The meditation and visualization practices are primarily Taoist, with influence from other eastern and western traditions.

Conclusion

It is clearly evident that people spend too much time sitting and reclining, and that these sedentary behaviors have significant deleterious effects on health. This is especially egregious with respect to people who are required to spend hours sitting at their desks for their livelihood or school

because they have less choice in the matter. In order to get people to upend their sedentary behavior, it is necessary to clearly inform them of the dangers of sitting too much in ways that sink in. It is crucial not only to show them alternatives, provide goal-setting opportunities and self-monitoring systems, but also to provide them with work-place and school environments that are conducive to standing and moving more.

These data also show the value of the motivational information and encouraging physical activity throughout the workday. And by incorporating light activity into otherwise sedentary routines, sedentary behavior can be substantially reduced (Rovniak et al., 2014; Steeves et al., 2012). Furthermore, it would be beneficial if employers not only educate desk-workers about the benefits of moving more and standing at their desk, but enable them to do so by providing standing desks, social support, and work environments conducive to periodic light to moderate physical activity.

Goals of the GUM project

- To design the GUM instructional program.
- To develop a website with supporting audio/visual demonstrations and interactive chat-rooms.
- To develop a mobile app.
- To develop audio/visual material to support the individual learning episodes/classes.
- To offer the program and evaluate its efficacy using participants from CSUMB.
- To revise the program based on what is learned from the CSUMB program implementation.

Learning Objectives

- Participants will be able to perform a series of six basic sets of activities to help with balance, circulation, mobility, strength, relaxation, and general well-being.

- Participants will be able to identify how each exercise is conceived to affect particular physical and psychological benefits.
- Be able to choose from a list the diseases that are caused or exacerbated by sedentary behavior.
- Participants will be able to perform basic standing and moving meditations and visualization practices that help reduce stress, lower blood pressure and alleviate emotional distress
- Participants will be able to assess their own lifestyle and attitudes identify where they could make changes that would enhance their health and extend their years.
- Participants will know how to access an online platform that will help them learn, understand, and continue the process of transformation presented in the GUM program.

Methodology

Participants

This is a non-experimental longitudinal research project with a dose-response relationship and a nonequivalent comparison-group design. And since it is considering the impact of the GUM program on individuals and how they subjectively respond to the treatments they undertake voluntarily, there is a certain amount of phonomanology involved in this research. Provided contact can be maintained with all subjects (minimizing differential attrition), those who do not proceed to each sequential level of participation will be considered as different groups. Mixed questionnaires will be used to gather data of both quantitative and qualitative nature, as well as some demographic information.

1. Group One will include those survey respondents who only respond to the preliminary questionnaire (baseline), and will be considered a control group.
2. Group Two will include those who complete the first questionnaire and the orientation course including the After-Course Questionnaire.

3. Group Three will include those who surpass group two by accessing the website and utilizing the videos on the website periodically, and perhaps at differing degrees of activity.
4. Group Four will include those who do all of the above plus download and use the app to differing degrees.

Data Collection

All subjects will be followed for the duration of the study (three months) and weekly and monthly questionnaires will be propounded. Variable activity amount and distribution throughout the day will be collected throughout the process. Data will reflect the limits of their grouping and limits of participation. Data will be gathered from a random sample of people (research subjects). Research subjects will be solicited with available lists from researchers contacts and associated lists.

Randomness is based on the sample of those who actually respond and participate. There is potential here to call into question the internal validity for some of the process, as some of the contact on the lists may have foreknowledge of the activities introduced in the program. Although this is a potential area for data to be corrupted, it is likely to result in more conservative results than inflated data.

The Preliminary Survey Questionnaire (treatment 1) will establish a baseline for knowledge and activity level for all subjects in the cohort. After completion of the orientation course (treatment 2) subjects will be assessed for knowledge retention and transformative success with a Post Course Assessment (treatment 3). Weekly updates will be solicited from those who download and use the app (treatment 4). Because the app is only available on an Android platform, there will be self-selection based on access to that platform. Others (Group Three) will have the opportunity to access the website and continue the program (but that will not be as convenient). Monthly mixed questionnaires will be sent out to all initial respondents regardless of how far along they went in the GUM program.

Data will be analyzed to determine the level of positive results for each group: increased activity, mobility, and general wellbeing, and decreased sedentary behavior, pain, stress, and upset. Groups will be compared to see if a general trend shows significant positive results from greater involvement with the GUM program.

Resources

Resources used will be the GUM orientation course, the GUM mobile app, the GUM website. Four students from CST499 were instrumental in developing the mobile app, database, and website in the Spring of 2021. A significant number of test subjects will have to be recruited to undertake the beta test of the GUM program. It would be helpful if to acquire contact lists and solicit participation from current and former MIST students and faculty as well as other CSUMB cohorts. The researcher will reach out to all of his extended contacts for participants as well. Several hundred respondents would be optimal, but even 50-60 should make for a reasonable initial survey study.

Timeline

May 2021

- Complete first version of the GUM orientation program (deliverable)
- Complete first version of the GUM application for mobile device (deliverable)

June 2021

- Solicit research subjects
- Gather results of Preliminary Mixed Questionnaire and contact information

June-August 2021

- Follow up with request for After Course Mixed Questionnaire (second questionnaire) from those who didn't complete it. Those who do not complete the second questionnaire will be considered Group 1, and solicited for follow up monthly mixed questionnaires same as all groups.

- Follow up with weekly and monthly surveys with all those who complete the second questionnaire. Those who do nothing more than the first and second questionnaire (and presumably the orientation course in between) will be considered Group 2. Those who do not use the app, but engage in continued practice and website use will be considered Group 3.
- Follow up with GUM App users according to the app program (weekly and monthly mixed questionnaires and use data from the database). These will be Group 4.

September- November 2021

- Analyze all data.
- Revise orientation course based on feedback.
- Revise mobile app based on feedback.

December 2021

- Submit research and capstone project (deliverable)

January-June 2022

- Promote and distribute GUM program to a wider audience (deliverable)

Implications and Limitations

Implications of this study could show that the GUM app is either significantly effective in improving the life of users (improvement is somewhat subjective), ineffective (no significant improvement), or even damaging or detrimental to users if significant respondents report pain, injury, or even wasted time. The study is limited by access to a sufficient number of test subjects, dependability of test subjects in filling out the questionnaires, and consistency and completeness of collected data.

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Appendix 1: GUM Questionnaires

Get Up and Move: Preliminary Questionnaire for Orientation Course

This GoogleForm that has to be accessed through Google the link below:

<https://docs.google.com/forms/d/e/1FAIpQLSf4X9zwm-yCkVStsJHt2CW6SBV6p2Imtr64M4-3xyrWQ2C9A/viewform>

Get Up and Move: After Course Assessment for the GUM Orientation Course

This GoogleForm that has to be accessed through Google the link below:

<https://docs.google.com/forms/d/e/1FAIpQLSeICEJETH6Z7z1gZVxyGIFbirB23A9wNUifQwFnFsmWeZqpow/viewform>

Onboarding Survey for the GUM app and GUM website users:

Thank you so much for helping us gather information on how the GUM program is working for you. This is not a test, there are no right or wrong answers.

1. I plan to use the Get Up and Move app at least _____ days this week? (Please enter a number from 1-7.)

2. How do you hope to benefit from using the GUM mobile app? [(Short answer). For example: more energy, less pain, reduction in medications, increase fitness, lose weight, more mobility, general well-being, other]

3. In general, I find that I currently sit _____ over the course of the day.

- a. 4 hours or less
- b. 4-6 hours
- c. 6-8 hours
- d. 8 hours or more

4. I find that I currently sit _____ at a time without taking at least a 5- minute break to move around.

- a. 30 minutes or less
- b. 30-60 minutes
- c. 60-90 minutes
- d. 90 minutes or more

The next few question relate to your general level of pain, mobility and energy level at different times of the day:

Baseline Pain Scale

5. What is your general pain/discomfort level when you wake up in the morning?

1-Little to none, 10- Unbearable

6. What is your pain/discomfort level throughout the day?

1-Little to none, 10- Unbearable

7. What is your pain/discomfort level when you go to bed in the evening?

1-Little to none, 10- Unbearable

Baseline Mobility:

8. What is your general mobility level when you wake up in the morning?

1-Barely able to move 10-Full mobility

9. What is your mobility level throughout the day?

1-Barely able to move 10-Full mobility

10. What is your mobility level when you go to bed in the evening?

1-Barely able to move 10-Full mobility

Baseline Energy:

11. How would you rate your energy level when you wake up in the morning?

- a. Low
- b. Moderate
- c. High

12. How would you rate your energy level throughout the day?

- a. Low
- b. Moderate
- c. High

13. How would you rate your energy level when you go to bed in the evening?

- a. Low
- b. Moderate
- c. High

14. I am _____ years old.

- a. 19 or under
- b. 20-39
- c. 40-59
- d. 60 and beyond

Please note for yourself how much medication you use on a daily basis that is prescribed as “prn” or use as you feel necessary (over the counter, naturopathic, and prescription medications). People often use these optional medications to make their life more bearable. Your use of these substances may change after a time using the GUM app. It is useful to know how the program is affecting you. So, by tracking your use of medications, you may be able to see progress or setbacks more objectively. You will also be able to give us better feedback with respect to how this program works for you if you can summarize this information in your surveys.

Thanks again for participation in Get Up and Move and for your thoughtful completion of this survey. Please use the space below to write any other comments you may have that could benefit the development of this program. (long answer)

Weekly Survey for the GUM app and GUM website users.

Thank you so much for continuing to help us gather information on **how well the GUM program works for you**. There are no right or wrong answers.

1. I used the Get Up and Move app _____ days this past week.

- a. 0
- b. 1-2
- c. 3-5
- d. 6-7

2. Each day I used the GUM app this week, I completed approximately _____ guided activity sessions out of the possible six sessions.

- a. 1-2
- b. 3-4
- c. 5-6
- d. All 6 plus some extra sessions

3. I reviewed approximately _____ teaching video(s) from the GUM program this week.

- a. 1-2
- b. 3-4
- c. 5-6
- d. More than six

4. I find that I have _____ since I started using the GUM mobile app.

- a. Less energy

- b. About the same amount of energy
- c. More energy

5. I find that I have _____ since I started using the GUM mobile app.

- a. Less pain
- b. About the same amount of pain
- c. More pain

6. I find that I use _____ since I started using the GUM mobile app.

- a. Fewer medications
- b. About the same amount of medications
- c. More medications

7. I find that I have _____ since I started using the GUM mobile app.

- a. Less mobility
- b. About the same amount of mobility
- c. More mobility

8. I find that my general wellbeing has _____ since I started using the GUM mobile app.

- a. Decreased
- b. Remained about the same
- c. Increased

9. I find that I sit _____ throughout the whole day since I started using the GUM app.

- a. Less
- b. About the same
- c. More

10. I find that I sit _____ time without taking at least a 5 minute break to move around since I started using the GUM app.

- a. Less
- b. About the same
- c. More

The next few questions relate to your general level of pain, mobility and energy level at different times of the day **since you downloaded the GUM mobile app.**

11. What is your general pain/discomfort level when you wake up in the morning?

1-Little to none, 10- Unbearable

12. What is your pain/discomfort level throughout the day?

1-Little to none, 10- Unbearable

13. What is your pain/discomfort level when you go to bed in the evening?

1-Little to none, 10- Unbearable

14. What is your general mobility level when you wake up in the morning?

1-Barely able to move 10-Full mobility

15. What is your mobility level throughout the day?

1-Barely able to move 10-Full mobility

16. What is your mobility level when you go to bed in the evening?

1-Barely able to move 10-Full mobility

17. How would you rate your energy level when you wake up in the morning?

- a. Low
- b. Moderate
- c. High

18. How would you rate your energy level throughout the day?

- a. Low
- b. Moderate
- c. High

19. How would you rate your energy level when you go to bed in the evening?

- a. Low
- b. Moderate
- c. High

20. The level of intensity I chose when I started the GUM program:

- a. Is still just right.

- b. I increased it (for level 1 & 2 users).
- c. It was a little much, I needed to back off a bit (for level 2 & 3 users).

21. The GUM program is a good fit in my daily routine.

- a. Very true
- b. Mostly true
- c. Partly true
- d. Not very true