Views on the Apple Health Application from Future Health Science Professionals

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Views on the Apple Health Application from Future Health Science Professionals

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Abstract

Introduction: Fitness and wellness applications are now the norm that smartphones come with the applications pre-installed on the device. In 2016 and 2017 wearable fitness technology was rated as the top trend in health and wellness sectors (Bunn et al, 2018). More information is needed to improve the utilization of fitness tracking technology to create a bridge between health professionals having their clients use the applications and the people building the tech.

Methods: Healthy students at least 18 years of age at Merrimack College (mostly in the School of Health Sciences) were asked to partake in an online survey. The online survey asked my self-developed questions about who they are (age, full or part time student, gender), as well as questions about your current exercise habits and how they use the Apple Health Application.

Results: Eighty-eight percent of respondents were aware of the Apple Health application on the Apple iPhone and 57.8% used the apple health application before. When asked about which features they would utilize in the apple health application the respondents recorded that they would mostly use step count at 64.1% of total respondents. 59.4% of total respondents chose sleep for the next most popular option. The recorded answers for the most helpful for tracking personal fitness goals listed 42.2% Tracking activity, 45.3% Nutrition, 7.8% Tracking Sleep, and 4.7% None. The question “Which is more helpful for tracking your fitness goals of future clients/patients/athletes?” recorded 45.3% Tracking activity, 48.4% track Nutrition, and 4.7% tracking Sleep. Only thirty-three percent tracked their food
intake using the Apple Health App or another nutritional application in the past 6 months. Sixty-eight percent never used the app to track food intake.

**Discussion:** More research into creating user friendly nutritional tracking could be beneficial for health application tracking. Specific studies for the views on nutrition tracking should be explored in the future. Research into the use and views on sleep tracking could be beneficial. Finding out why nutrition tracking is so underutilized with these Merrimack College students.

**Conclusion:** Nutrition was ranked as the most important application feature for personal and clientele tracking for health. Nutrition was also the most underused aspect of fitness tracking. Sleep was of the lowest importance for client and personal tracking. Nutrition tracking technology should be advanced more according to the listed importance stated from Future Health Science Professionals.

**Introduction**

**Background**

Fitness and wellness have come to the forefront of the technology boom over the past twenty years. Fitness applications on smartphone devices and watches provide beneficial information to track health levels for avid exercisers. Fitness and wellness applications are now the norm that smartphones come with the applications pre-installed on the device. In 2016 and 2017 wearable fitness technology was rated as the top trend in health and wellness sectors (Bunn et al, 2018). There are so many different fitness applications on the smartphones that standards and protocols need to be developed for more accurate application progress tracking (Bunn et al, 2018). More information and research is needed to determine which apps provide the most accurate and reliable information. The more research that is done on what features and the
aspects the user values, the more these technologies can help users to maintain healthy habits. Research towards what health science professionals and users believe to be more helpful in a fitness application can help to drive studies in these directions. It is very important to be sure that the apps reflect what users think of as important, but also reflect what research shows in terms of best practices for behavior change principles (Lister et al, 2014, Direito et al, 2014 ). If people can be exposed to fitness knowledge and tools that may help them to start and maintain an exercise program, this could lead to a better understanding of preventive steps to take for their health. Whether an individual can track their physical fitness through step count of miles or nutritional macronutrient tracking both can help to improve an individual’s health endeavors through knowledge and self-efficacy.

**Literature Review**

Currently research has shown specific aspects of fitness applications that have been improving user experience. Most activity tracking application with self-monitoring, goal-setting and unique individual feedback have been proven important features to greatly change an individual’s health behavior in younger and older adults (Higgins, 2016). Virtual coaching, games and adventure themes are other aspects of current health tracking technology that improve effectiveness (Higgins, 2016). The individual can successfully share these aspects with their friends and utilize the levels as a way to express how they improved. It seems that most successful fitness technology being used right now revolve around activity levels. With the aspects used above activity tracking technology has expanded greatly to all exercise levels.

Positive feedback from external sources can be beneficial for many endeavors in an individual’s life. As shown in some studies, the use of positive feedback within smartphone fitness applications leads to the likelihood of the more consistent use of the device (Lim & Noh,
2017). More work is needed to correlate the benefit of performance feedback to improve self-efficacy and outcome of the individuals exercise routine (Lim & Noh, 2017). Positive feedback was seen as more beneficial than negative feedback in consistent use of fitness applications in the article from Lim & Noh 2017. It is likely that as applications begin to include more feedback principles in their framework that smartphones users will more likely find the features beneficial to use. Currently the most popular applications involve the tracking of fitness levels which the user monitors this on their own (Higgins et al, 2016). Nutrition and sleep applications seem to be less popular compared to fitness activity tracking.

Fun features or social features are highly regarded by fitness application users in selection of specific apps (Lim et al, 2017). Users want to be able to be intrigued by their applications and want to learn from the data they tracked. This can greatly help with use adherence to specific smartphone fitness applications.

Studies on the use of games and social interaction have been shown to improve the use of specific applications and this could possibly be useful in the features of fitness applications (Lister et al, 2014). Games like “Zombie, Run!” have been shown to increase aerobic exercise through the use of tailored music and challenges to beat (Higgins 2016). Including features of gaming in a fitness application may be related with increased the use of the application and the motivation to complete exercise tasks (Lister et al, 2014). Another study observed that the inclusion of gaming aspects are much underutilized within the health and wellness sector (Edwards et al, 2016). Collaboration of app developers, behavior scientists, physicians, and exercise professionals could be beneficial in creating application features that lead to consistent exercise and health adherence (Edwards et al, 2016).
The use, preference and interest of utilizing fitness tracking applications has been studied and conveys that most users are younger and they want the devices to be accurate (Alley et al, 2016). Fitness information tracking and ability to count steps accurately were shown to be important to the users (Alley et al 2016). This can be very important in the preventative health sector because health professionals can reach users earlier in their life with helpful activity knowledge.

Another study observed that applications that cost more have been shown in some cases to be more likely to have behavior change theory features that lead to more exercise adherence effectiveness (Direito et al, 2014). Evidence based behavior change models have been suggested to be included in fitness applications to increase behavior change appropriately. Also it could possibly be beneficial to users that don’t have easy access to healthcare and need a tool to better their health. (Higgins et al, 2016). It might be helpful to create a standard within cheap and more costly applications to allow more people to have access to the similar health knowledge foundations. It can also be very beneficial to focus on nutritional features that are currently not as popular compared to fitness tracking, especially with the high rates of chronic diseases such as Type 2 Diabetes.

A study from 2006 by Consolvo et al, stated key design ideas for fitness technology including credit for exercise activities, awareness of activity level, social support, and constraints of the individual everyday life (Consolvo et al 2006). These are still very highly regarded aspects of smart phone applications and more research is needed on why these aspects are so important.

Lastly, another study explained that the user selection of a fitness application was higher correlated with its functional capabilities and qualities, which in turns means the quality of information provided about health and social networking should be accurate and easy to
understand (Lee et al 2017). It’s important for fitness application developers understand these aspects and the users request to have features that strongly utilize these characteristics.

The purpose of my study is to survey college aged individuals on the features on the smartphone Apple Health Application. It will examine student use and perceptions of the Apple Health Application and other fitness technologies. This information will be important in identifying and gaining more knowledge on fitness technology trends on campus. If they agree to be in this study, they will be asked to complete an online survey. The online survey will ask questions about who you are (age, full or part time student, gender), as well as questions about your current exercise habits and how you use Apple Health App or other exercise technologies. I believe it is beneficial to improve the data collection of mainstream fitness applications to hopefully use this knowledge to determine aspects that are popular or unpopular within the specific fitness application. This data can be used to improve future feature development in fitness applications in order to improve application adherence for health goals.

**Methods**

**Study:**

Views on the Apple Health Application from Future Health Science Professionals study was approved by the Institutional Review Board with the purpose of reviewing views on this App from students at the college.

**Participants:**

Participants in the study were at least 18 years old, healthy, and a student at Merrimack College. Participation in this study was completely voluntary and convenience sampling was used. Sixty-four individuals participated in the study survey through e-mails from Anatomy and Physiology Professors during February 2019 and my own e-mail flyer. Undergraduate participants were
offered extra credit from their professors if they participated in the survey. Graduate students were recruited by myself through two e-mail communication during the sampling period.

**Instruments/Measures:**

The online survey asked my twenty-four self-developed questions about who they are (age, full or part time student, gender), as well as questions about their current exercise habits and how they use the Apple Health App or other exercise technologies. Completing the survey took approximately 10 minutes. There were no reasonable foreseeable (or expected) risks. There were no anticipated benefits for the participants in the study. As previously stated, undergraduate students received extra credit from their professor for participating in the survey and there was no alternative procedures for this research study.

*Example:*

*Were you aware there is the Apple Health Application on your smartphone?*

*Mark only one oval.*

- Yes
- No

**Procedures:**

Agreement to be in the study, required the participant to do the following things: Complete an online survey. The online survey asked questions about who they are (age, full or part time student, gender), as well as questions about your current exercise habits and how they use Apple Health App. Completing the survey took approximately 10 minutes.
Data Analysis:

The data collected was analyzed through descriptive statistics. It was important for specific questions to figure out the differences in views for personal fitness tracking and possible future clients. These questions helped to explain the perceptions of features of the Apple Health App.

Results

Table 1: Demographics of Study Participants (N= 64)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of Students</th>
<th>Student Time</th>
<th>Age</th>
<th>College of Health Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>Full-time</td>
<td>Part-time</td>
</tr>
<tr>
<td>Graduate</td>
<td>9</td>
<td>22</td>
<td>26</td>
<td>5</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>8</td>
<td>25</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>47</td>
<td>59</td>
<td>5</td>
</tr>
</tbody>
</table>

Sixty-four respondents participated in the survey with 100% consent completion. Thirty-one (48.4%) graduate and thirty-three (51.6%) undergraduates participated and completed the entire survey. Fifty-nine respondents were full-time students with five being part-time class hour students. The respondents identified 73.4% Female and 26.6% identified as Male. All recorded graduate students were 22 or older and all undergraduate students were 18-21. Of the sixty-four respondents, there were sixty-three students in the School of Health Sciences and 1 not part of the specific college which was beneficial for the characteristics of the survey.
Study participants reported on how much they exercised each week, specifically, did they exercise, never, less than 60 minutes or did they exercise 60 minutes or more. The results suggest that 50% of study participants exercised less than 60 minutes, while 48.4% participants exercised at least 60 minutes. Thirty study participants exercised three or more days per week, 27 exercised 2-3 days/week, 6 exercised 1 day/week, and 1 participant did not exercise at all.
Table 2: Activity Levels (N= 64)

<table>
<thead>
<tr>
<th>Number of Students</th>
<th>Day</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Less than 60 minutes</td>
</tr>
<tr>
<td>Graduate</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total Participant Percent:</strong></td>
<td><strong>1.6%</strong></td>
<td><strong>50%</strong></td>
</tr>
</tbody>
</table>

For the survey population that was studied 95.3 % had an iPhone and 65.6% had used a fitness application of some kind. When answering whether they would share activity results with others it was recorded that 42.2 % said “Yes” and 57.8 % stated “No”.

**Graph 3:** Is it beneficial and fun to share your fitness activity results with other people?

53.1 % said “Yes” and 46.9% said “No” to agreeing that sharing activity tracking results is beneficial and fun. Eighty-eight % of respondents were aware of the apple health application on the apple iPhone and 57.8% used the apple health application before. The amount of time on a regular basis the individual used the app was recorded as 53.1% never, 36% sometimes, and 10.9% always.
Graph 4: Were you aware there is the Apple Health Application on your smartphone?

Graph 5: How often do you use the Apple Health App?
When asked about which features they would utilize in the apple health application the respondents recorded that they would mostly use step count at 64.1% of total respondents. Fifty-nine % of total respondents chose sleep for the next most popular option.

**Graph 6: What features do you utilize or would possibly use with the Apple Health App?**

The recorded answers for most helpful for their step count personal fitness goals came to 53.1% Walking or Running distance, 39% Steps, 1.6% Flights climbed, and 6.3% None.

**Graph 7: Which description for tracking step count do you believe is most helpful for your fitness goals?**
“Which description for tracking step count do you believe is most helpful for your future patients/clients/athletes?” recorded respondents stating 68.8% Walking or Running distance, 26.6% Steps, 1.6% Flights climbed, and 3% None.

**Graph 8:** Which description for tracking step count do you believe is most helpful for your future patients/clients/athletes?

![Graph 8](image)

Only thirty-three percent tracked their food intake using the Apple App or another nutritional application in the past 6 months. Sixty-eight percent never use the app to track food intake. The recorded answers for the most helpful for tracking personal fitness goals listed 42.2% Tracking activity, 45.3% Nutrition, 7.8% Tracking Sleep, and 4.7% None.

**Graph 9:** Which is more helpful for tracking your fitness goals?

![Graph 9](image)
The question “Which is more helpful for tracking your fitness goals of future clients/patients/athletes?” recorded 45.3% Tracking activity, 48.4% track Nutritional choices, and 4.7% tracking Sleep. Sleep was of the lowest importance for client and personal tracking.

**Graph 10: Which is more helpful for tracking your fitness goals of future clients/patients/athletes?**

![Graph showing tracking activity, nutrition, tracking sleep, and none]

**Discussion**

The study provided valuable knowledge on the views in the Merrimack college student community. Specific characteristics in the statistical analysis proved that there are certain views for an individual using the Apple Health Application. Nutrition is one of the most underutilized features but selected as the tracking that is most beneficial. The results support the importance of improving nutrition tracking technology in order to increase utilization of that feature.

The importance of my findings are that more in depth research is needed. I believe that more research into creating user friendly nutritional tracking could be beneficial for health application tracking. A specific study on the features of nutrition tracking technology could divert the current track of nutrition application tracking technology. Specific studies for the views on nutrition tracking can be paramount in the future of health technology. Also research into the use and views on sleep tracking could be beneficial in creating more value in that
market. It seems that sleep tracking is not as popular among the younger generation. These younger adults may be more inclined to have inconsistent sleeping patterns and this technology could be helpful.

Some study limitations included that all the participants are from the Merrimack College community. If the study utilized the entire Merrimack College community this could lead to larger data population to study. The survey could also be sent to faculty to seek their views on fitness technology. Lastly it could have been limited by the general aspect of my survey questions. The study didn’t ask any open-ended questions on features and specific feature characteristics.

The practical application for the exercise science practitioner or strength and conditioning coach would be utilizing the information so the developers of the applications can improve the design to encourage more use in these professions. If the tech community can work on improving the attraction to nutrition and activity tracking applications this will help to support the work these health professionals are doing with their clients or athletes.

**Conclusion**

As stated before, the purpose of the study was to examine student use and perceptions of the Apple Health Application and other fitness technologies. Data collected from the online survey stated that nutrition was ranked as the most important application feature for personal and clientele tracking for health. Nutrition was also the most underused aspect of fitness tracking. Sleep was of the lowest importance for client and personal tracking. It seems that even though fitness technology has made more strides with sleep tracking that it’s still not considered statistically important to the students. Nutrition tracking technology should be advanced more according to the listed importance stated from Future Health Science Professionals.
I believe that my study provides framework for the importance of studying nutrition tracking features more closely. The majority of exercise science practitioners will spend most of their time training clients physically and less time knowing everything the client or athlete might be eating on a regular basis. It can be very important to create nutrition or exercise adherence with health and wellness tracking technology outside of sessions. It is a very useful tool for coaching in order to help build self-efficacy in clients and help them create an overall healthy lifestyle.
References


Appendix 1

Apple Health Application Survey Consent

CONSENT TO PARTICIPATE IN RESEARCH PROJECT ENTITLED: Views on the Apple Health Application from future health science professionals.

IRB number: IRB-FY18-19-141

Principal Investigator(s): Trent Talmadge

KEY INFORMATION:

You are being asked to participate in a research study examining student use and perceptions of the Apple Health Application and other fitness technologies. Your participation in this study is completely voluntary. The purpose of this study is to examine student use and perceptions of the Apple Health Application and other fitness technologies. This information will be important in identifying and gaining more knowledge on fitness technology trends on campus. If you agree to be in this study, you will be asked to complete an online survey. The online survey will ask questions about who you are (age, full or part time student, gender), as well as questions about your current exercise habits and how you use Apple Health App or other exercise technologies. Completing the survey should take approximately 10 minutes. There are no reasonable foreseeable (or expected) risks. There may be unknown risks. There are no anticipated benefits for you as a participant in the study. You will not receive any monetary compensation for participating in the study. Undergraduate students will receive extra credit from their professor for participating in the survey. There will be no alternative procedures for this research study.

Introduction:

• You are being asked to participate in a research study examining student use and perceptions of the Apple Health Application and other fitness technologies. To be eligible to participate in the study, you must be at least 18 years old, healthy, and a student at Merrimack College. Your participation in this study is completely voluntary. We ask that you read this form and ask any questions that you may have before agreeing to participate in the study.

Study Purpose:

• The purpose of this study is to examine student use and perceptions of the Apple Health Application and other fitness technologies. This information will be important in identifying and gaining more knowledge on fitness technology trends on campus.

Description of the Study Procedures:

• If you agree to be in this study, you will be asked to do the following things: You will complete an online survey. The online survey will ask questions about who you are (age, full or part time student, gender), as well as questions about your current exercise habits and how you use Apple Health App or other exercise technologies. Completing the survey should take approximately 10 minutes.

Risks/Discomforts of Being in this Study:

• There are no reasonable foreseeable (or expected) risks. There may be unknown risks.

Benefits of Being in the Study:

• There are no anticipated benefits for you as a participant in the study.

Confidentiality:
• Information is provided to the investigator anonymously: The subject's information will be anonymous when it is provided to the investigator, so the investigator cannot link subject information with subject identity. Emails will be collected initially but will not be associated with their responses for the final public study.

Payments or Compensation:
• You will not receive any monetary compensation for participating in the study. Undergraduate students will receive extra credit from their professor for participating in the survey.

Right to Refuse or Withdraw:
• The decision to participate in this study is entirely up to you. You may refuse to take part in the study at any time without affecting your relationship with the investigators of this study, Merrimack College or any study partners. Your decision will not result in any loss or benefits to which you are otherwise entitled. You have the right not to answer any single question, as well as to withdraw completely from the interview or survey at any point during the process; additionally, you have the right to request that the interviewer not use any of your interview material.

Right to Ask Questions and Report Concerns:
• You have the right to ask questions about this research study and to have those questions answered by me before, during or after the research. If you have any further questions about the study, at any time feel free to contact me, Trent Talmadge at talmadget@merrimack.edu or by telephone at 978-837-5280. You may also contact the Merrimack College faculty supervisor of this research (Dr. Cynthia Ferrara, ferraracm@merrimack.edu, 978-837-5354). If you like, a summary of the results of the study will be sent to you. If you have any other concerns about your rights as a research participant that have not been answered by the investigators, you may contact the Chair of the Merrimack Institutional Review Board at 978-837-5280 or by email at irb@merrimack.edu.
• If you have any problems or concerns that occur as a result of your participation, you can report them to the Chair of the IRB at the contact information above.

Informed Consent:
• Your signature below indicates that you have decided to volunteer as a research participant for this study, and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep.

_________ Yes, I agree to participate in the study and complete the online survey on physical activity.

Your email address (talmadget@merrimack.edu) will be recorded when you submit this form. Not talmadget? Sign out
* Required

Consent to start study *
Mark only one oval.

- 100%

Apple Health Application Survey Questions
What gender do you identify with: *

Age *
Mark only one oval.

- 18-21
- 22 or older
Student in the College of Health Sciences at Merrimack College: *
Mark only one oval.
- Yes
- No

Level of student at Merrimack College *
Mark only one oval.
- Undergraduate
- Graduate

Student class hours: *
Mark only one oval.
- Full-time
- Part-time

Physical Activity per day: *
Mark only one oval.
- None
- Less than 60 minutes
- More than 60 minutes

Physical Activity per week: *
Mark only one oval.
- None
- 1 Day
- 2-3 Days
- More than 3 Days

Do you have an Apple IPhone? *
Mark only one oval.
- Yes
- No

Have you ever used a fitness tracking application? *
Mark only one oval.
- Yes
- No

Do you share your or would you want to activity results with other people? *
Mark only one oval.
- Yes
- No

Is it beneficial and fun to share your fitness activity results with other people? *
Mark only one oval.
- Yes
- No

Were you aware there is the Apple Health Application on your smartphone? *
Mark only one oval.
• Yes
• No

Have you used the Apple Health App? *
Mark only one oval.

• Yes
• No

How often do you use the Apple Health App? *
Mark only one oval.

• Never
• Sometimes
• Always

Do you have an Apple watch linked to your Apple Health App? *
Mark only one oval.

• Yes
• No

What features do you utilize or would possibly use with the Apple Health App? Check all that apply. *
Check all that apply.

• Step Count
• Nutrition
• Sleep
• Mindfulness
• Health information

Which description for tracking step count do you believe is most helpful for your fitness goals? Check one. *
Mark only one oval.

• Walking or Running distance
• Steps
• Flights climbed
• None

Which description for tracking step count do you believe is least useful for your fitness goals? Check one. *
Mark only one oval.

• Walking or Running distance
• Steps
• Flights climbed
• None

Which description for tracking step count do you believe is most helpful for your future patients/clients/athletes? *
Mark only one oval.

• Walking or Running distance
• Steps
Which description for tracking step count do you believe is least useful for your future patients/clients/athletes? *  
Mark only one oval.

- Walking or Running distance
- Steps
- Flights climbed
- None

Have you tracked your food intake in the Apple App or another application for nutrition in the past 6 months? *  
Mark only one oval.

- Yes
- No

How many days do you track nutrition on any application? *  
Mark only one oval.

- Never
- 1-3 Days
- 4-6 Days
- Everyday

Which is more helpful for tracking your fitness goals? *  
Mark only one oval.

- Tracking activity
- Nutrition
- Tracking Sleep
- None

Which is more helpful for tracking your fitness goals of future clients/patients/athletes? *  
Mark only one oval.

- Tracking activity
- Nutrition
- Tracking Sleep
- None

Never submit passwords through Google Forms.