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Descriptive Evaluation of Free Exercise Apps and Ability to Promote Physical Activity

Cynthia M. Ferrara[1], Christopher Burke[1], Allison Fahey[2]

[1]School of Health Sciences, Merrimack College, North Andover, MA, USA; [2]Department of Physical Therapy, University of Massachusetts Lowell, Lowell, MA, USA

ABSTRACT

Ferrara CM, Burke C, Fahey A. Descriptive Evaluation of Free Exercise Apps and Ability to Promote Physical Activity, **JEPonline** 2018;21(2):64-69. The purpose of this study was to evaluate free exercise apps available on iTunes and their potential for promoting physical activity. Study investigators identified 153 free exercise apps on iTunes. Written descriptions posted by the app developers were evaluated by two investigators using the enabling and reinforcing components of the Precede-Proceed Health Promotion Model as a guide. Six factors (three enabling and three reinforcing) were evaluated, with one point recorded for each factor included in a particular app. Enabling scores ranged from 0 to 3. One hundred and thirty-four (87.6%) apps included videos or pictures, while 123 apps (80.4%) included written instructions on how to perform exercises. Thirty-eight apps (24.8%) included the ability to track daily exercise. Reinforcing scores also ranged from 0 to 3. Fifty-five (36%) apps interfaced with a social networking site, while 33 (21.6%) provided feedback and support from a personal trainer. Fifteen (9.8%) included rewards for daily exercise. Total scores ranged from 0 to 5. No apps included all six factors. The present study suggests that the majority of exercise apps include videos, pictures, or written instructions on how to exercise. But many apps do not include basic features that may help people to maintain an exercise program, including social support, feedback from a personal trainer, or rewards. Additional research is needed on how exercise apps can be utilized to promote physical activity.

Key Words: Exercise, Health Promotion, Mobile Technology

INTRODUCTION

Research shows that 50% of Americans do not meet the recommendations for aerobic physical activity (150 min·wk^{-1} at moderate intensity or 75 min·wk^{-1} at high intensity) (4,8). Recent advances in technology and mobile devices may be helpful in the promotion of physical activity. The Pew Research Institute reports that 83% of adults aged 19 to 29 yrs have smart phones and 84% use their phones to access the internet (11). People may be willing to use mobile devices and apps to work on healthy habits, including increasing daily physical activity (6). Fitness apps may provide a convenient and cost-effective opportunity to starting and maintaining an exercise program (10). Unfortunately, there is little evidence on the efficacy and effectiveness of apps to promote physical activity. In addition, there is little information on whether the apps use the best evidence and established health behavior change techniques to promote physical activity.

Recent studies suggest that many apps do not make use of the best evidence and established health behavior change techniques to promote physical activity (3,7,9,13). Some studies suggest that free apps or those less than one dollar are less likely to include appropriate behavior change techniques, although others suggest that there is no difference between free and paid apps (9,13). It is important to identify app features that promote physical activity in a cost-effective manner, particularly for individuals with limited funds. Since iTunes provides one of the largest selection of apps and generates twice the sales as Google play, iPhone apps were used in the present study (1).

The purpose of the present study was to evaluate free exercise apps available on iTunes and their potential for promoting physical activity. This information will help health and exercise professionals to make the best recommendations to their clients. It may also be helpful in determining how exercise apps can be used to promote physical activity.

METHODS

Procedures

This study involved identifying exercise-related apps on iTunes and performing a qualitative evaluation of written descriptions posted by app developers. Although evaluating the written descriptions of the apps compared to downloading and using the apps may have made for a more accurate evaluation, examining the written descriptions is similar to what a consumer might do when considering the purchase of an app. A general search of iTunes was performed in 2015, using the terms “exercise apps” or “fitness apps”. The study sample was limited to apps that were free and in English. Any apps that were miscategorized (i.e., not related to exercise or fitness or not free) were not included in the analysis. Apps were then categorized by type of exercise (e.g., aerobic, strengthening, combination of aerobic and strengthening, and yoga or Pilates).

Written descriptions posted by the app developers were evaluated by two investigators using components of the Precede-Proceed Health Promotion Model as a guide (5). The Precede-Proceed Model recognizes both individual and environmental factors as influencing health behaviors. The present study focused on the enabling and reinforcing influences on health behaviors. Enabling factors promote physical activity by teaching a skill, for example, using written descriptions or videos to demonstrate how to exercise and access to resources that

might help promote physical activity, such as tracking progress or the desired behavior. The enabling factors that were evaluated included: (a) animations, pictures, or videos demonstrating the exercises; (b) written instruction or information about exercise; and (c) tracking of daily exercise. Reinforcing factors included reward, such as social support or rewards that reinforced the desired behavioral change. The reinforcing factors that were evaluated included: (a) a social networking site or online community to provide support; (b) rewards or contests to encourage daily exercise; and (c) feedback or email support from a trainer. One point was recorded for each of the factors included in an app, up to a maximum of 6 points. The investigators then met to discuss the app evaluations and scores to resolve any differences in scores. These discussions resulted in resolution of any differences in the scores.

RESULTS

Two hundred and eighty-three exercise apps were identified on iTunes. Of these apps, 130 were miscategorized and removed from further analysis. The reasons for being miscategorized were: (a) apps related to a magazine or book on fitness (n=26); (b) apps associated with an exercise-related company or business (n=24); (c) exercise timers (n=35) or apps that only track exercise (n=32); (d) heart rate monitors (n=3); (e) body mass index calculators (n=5); and (f) pedometers (n=5). Of the remaining 153 apps, 8 included only aerobic exercises (AEX) and 46 included only strengthening exercises (ST). Twenty-eight apps included both aerobic and strengthening exercises (AEX/ST). Fifty-seven apps focused on specific site strengthening (SST), such as sit ups or arm strengthening exercises. Fourteen apps included yoga and pilates exercises (YOGA/PIL).

Evaluation of the apps included enabling, reinforcing, and total scores. Enabling scores ranged from 0 to 3. One hundred and thirty-four apps (87.6%) included videos or pictures, while 123 apps (80.4%) included written instructions on how to perform the exercises. Thirty-eight apps (24.8%) included the ability to track daily exercise. Reinforcing scores also ranged from 0 to 3. Fifty-five apps (36%) interfaced with a social networking site, while 15 (9.8%) included rewards for daily exercise. The rewards included additional exercises available using the app, digital rewards or badges, and coupons for items/services. Thirty-three (21.6%) provided feedback and support from a personal trainer.

Total scores ranged from 0 to 5. The majority of the apps had a total score of 2 (40.5%, n=62 apps). Seventeen apps (11%) had a total score of 1, 39 apps (25.5%) had a total score of 3, and 29 apps (19.0%) had a total score of 4, while only 3.9% (n=6) had a total score of 5.

DISCUSSION

The present study evaluated free exercise apps available on iTunes and their potential for promoting physical activity. Identified apps were ranked based on three enabling factors, important in instructing how to exercise and tracking the intensity and duration of exercise, and three reinforcing factors, important in maintaining a physical activity program, including social support and rewards for physical activity. Of the 153 apps identified, the majority of the apps included only two of the factors and none of the apps included all six factors. These results suggest that exercise and health care professionals need to work with app developers so that apps better reflect the best evidence for behavior change.

The present study found that most apps do not include factors that might promote an increase physical activity. Out of 153 apps, none included all 6 enabling and reinforcing factors identified as important in promoting daily physical activity and only 6 apps included 5 of the identified factors. In the present study, more than 80% of the apps included the enabling factors of written instructions or information on the benefits of exercise or videos and pictures showing how to perform particular exercises. This is similar to results reported by West et al. (13), which excluded free apps.

The present study also noted that that only 36% of the identified apps included social support or links to social media, important reinforcing factors that may result in increased physical activity. Only 21.6% included support from a personal trainer and only 9.8% included rewards for daily exercise. These results are also similar to West et al. (13). It will be important for collaboration between app developers and exercise professionals so new apps can better reflect the best evidence to promote physical activity.

A few studies have examined what features users might be looking for in apps that promote physical activity. User friendly features are very important and clearly emphasize the importance of working with the app developers to minimize issues. Robin and Bock (12) noted that users want automatic tracking of exercise, including steps and calories burned, as well as tracking progress toward a goal. Most people want an integrated music feature, so they can listen to music while they exercise. These features are important to the target population in that they can help users in maintaining long-term use of the exercise app.

In the present study, many apps included videos, pictures, and/or a written description of different types of exercises. These enabling features are important in promoting knowledge and self efficacy about physical activity and how to exercise. Social support via sharing information with a social networking site was the main reinforcing feature included in the identified exercise apps. Rewards and support from a personal trainer are also important in reinforcing physical activity. App developers, researchers, and exercise physiologists should engage users in discussions to identify desired features in exercise apps. This information will help with the development of user-friendly apps that will best promote physical activity in a cost-effective manner.

Limitations to this Study

There are limitations to the present study. The investigators used the descriptions written by the app developers rather than downloading the app. The developers may have overstated or understated the features that are available in the app. The investigators understood the risk of using the written descriptions compared to downloading and using app features. To simulate how a consumer might evaluate an app prior to purchase, the investigators chose to use written descriptions versus downloaded apps. Future research needs to consider downloading the apps and evaluation of how the apps function as a part of the evaluation. This will allow researchers to clearly identify what features are included in different apps and any issues with the apps that might make it difficult for adults to use. Also, this information will allow researchers to best inform clinicians and exercise professionals on which apps are user friendly and might be the most effective in promoting physical activity.

Another major limitation of the present study is rater error. The present study had two investigators evaluate all identified apps. The investigators then met to discuss each app, the scoring, and to resolve any differences in scores (less than 10% of the scores). In all cases, these discussions resulted in resolution of the differences. Thus, if either investigator made a mistake in ratings, these errors were noted and corrected. This careful review of the evaluation procedures and the scoring for each app helped to minimize the issues of the app evaluation procedures.

In addition to the limitations addressed in the previous paragraph, the present study included only free exercise apps. Although some investigators suggest that exercise apps that cost money may be more likely to include features that may improve the ability to promote physical activity, this has not always been observed (9). Some of the free apps are limited in functionality, but allow for an "upgrade" to a fully functional version. Health professionals need to consider this in making recommendations to their clients. It will be important to recommend a selection of apps that offer features that are important to a specific client and promote physical activity based on health behavior theory, while still minimizing cost to the client.

CONCLUSIONS

Many apps that promote exercise may not include key enabling and reinforcing features that include how to exercise and provide the support to maintain a healthy lifestyle. The findings in the present study emphasize the importance of exercise professionals working with app developers to help ensure that the new exercise apps include evidence-based strategies to encourage and reinforce daily physical activity. This information will help exercise and health professionals to make the best choices of new technologies to help their clients make and maintain healthy choices.

Address for correspondence: Cynthia M. Ferrara, PhD, School of Health Sciences, Merrimack College, North Andover, Massachusetts, USA, 01845. Email: ferraracm@ merrimack.edu

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