

Participant perceptions on a Fitbit and Facebook intervention for adolescent and young adult
cancer survivors: A qualitative study

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Abstract

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Purpose: Among cancer survivors, physical activity (PA) is associated with reductions in cancer recurrence, morbidity, and mortality. Most adolescent and young adult (AYA) survivors do not attain adequate PA. Digital modalities, specifically wearable activity monitors with a paired mobile application (app) and private social media group for support offer a promising approach for promoting PA among AYAs. We conducted a pilot randomized controlled trial of this intervention. To evaluate its acceptability and perceptions of the intervention components, we conducted qualitative interviews with those in the intervention.

Methods: Semi-structured qualitative interviews with 13 AYA cancer survivors ages 18-39 who participated in the intervention assessed perceptions of the digital components of the study and

buddy system of nominating a friend to participate in PA with the survivor. Analyses included a qualitative thematic analysis of the interview transcripts and coded interview segments into three predetermined categories: facilitators, limitations, and suggestions.

Results: Participants spoke of the wide-ranging benefits of the intervention, citing the Fitbit device and “buddy system” as major motivators to engage in PA and reach goals. Most participants noted feelings of increased physical and emotional wellness. The most-cited limitation of the intervention was the automated text messages, which participants found impersonal. Suggestions for improvement included integrating more elements of competition and group challenges.

Conclusions: This digital PA intervention was perceived as feasible and acceptable to AYA cancer survivors and appears promising for promoting PA and improving long-term health and quality of life.

INTRODUCTION

Through improvements in the diagnosis, treatment, and care of adolescent and young adult (AYA) cancer patients, survival rates for many cancers are rising.¹⁻⁵ After treatment, most cancer survivors deal with long-term health issues, some of which are consequences of treatment.⁶ AYA cancer survivors face the possibility of cancer recurrence and development of secondary cancers.⁶ Post-treatment conditions such as cardiovascular and pulmonary diseases, obesity, osteoporosis, fatigue, depression, and type 2 diabetes are commonly reported by survivors.¹⁻⁴ Physical activity (PA) is associated with reduced cancer recurrence and mortality, while also demonstrating the potential to mitigate many of these post-treatment conditions.⁶ However, a majority of survivors do not meet the recommended standards, defined as 150 minutes or more of moderate-to-vigorous PA or 75 minutes or more of vigorous PA per week, and at least 2 sessions of strength training per week.^{7,8} Though studies on PA interventions for AYA cancer survivors are sparse, studies focusing on other, usually older populations of cancer survivors consistently indicate major benefits of PA.^{9,10}

Facebook is one of the most popular social media platforms for AYA, making it a strong candidate for incorporation into PA interventions targeted at AYA cancer survivors.¹¹ Due to the ubiquity of smartphones, social media-based interventions are a particularly easy, effective, and low-cost way to reach large groups.¹² The Global Observatory for eHealth defines Mobile Health (mHealth) as “medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices.”¹³ In order to improve future mHealth PA interventions for AYA survivors, we conducted interviews to gather feedback directly from participants regarding the acceptability, usefulness, and

limitations of the intervention components. This qualitative study is one of the first to examine AYA cancer survivors' attitudes toward participating in a combined mHealth and social media intervention to improve PA as part of a randomized controlled trial (RCT).

METHODS

Participants and Intervention Materials

Cancer survivors who were eligible for the primary pilot RCT, and hence for these qualitative interviews, were between the ages of 18-39, completed cancer therapy 1-5 years ago, and were identified from the institutional tumor registry at the Seattle Cancer Care Alliance. They were randomly selected for approach^[AM2] with the aim of enrolling 50% female participants. Potential participants were mailed an introductory letter and received follow-up phone calls if they did not opt out of the study. Those who were interested in the study underwent screening to determine current levels of PA by self-report. Those who had inadequate levels of PA (defined as <100 minutes of moderate PA and <75 minutes of vigorous PA per week) were invited to participate. Additional eligibility criteria included the ability to speak and read English, willingness to download the Fitbit app on a personal smartphone or to use a study-provided iPod Touch with the app downloaded onto it, willingness to share Fitbit data with study staff, and access to the internet at least once per week. AYA survivors who met PA guidelines or those unable to participate in an independent exercise intervention due to hospitalization, inability to walk, or dependence on oxygen or wheel chair were excluded from the study. Participants were not provided with PA guidelines or materials for the study, although their providers could have provided information as part of usual care. All participants signed written informed consent approved by the Human Subjects Committee at the Fred Hutchinson Cancer Research Center.

A Fitbit account was created for all participants (intervention and control) and they were given a Fitbit Flex device, a consumer-oriented wearable accelerometer that estimates PA including steps and active minutes (activities ≥ 3 metabolic equivalents).

Additional intervention components included:

Facebook Group

Investigators created an invitation-only Facebook group that intervention participants were encouraged to use. The group served to provide daily encouragement and advice, as well as to announce weekly badges and awards for PA accomplishment. These included most steps taken, greatest increase in steps, and most Facebook posts. The group also acted as a forum for discussion around PA and the Fitbit device.

Text Messages

Intervention participants received standard text messages several times a week. Messages were a blend of informational (why PA is important) and motivational (e.g. “Physical activity can make you feel more confident. What activity will you do today?”).

Goal setting

Intervention participants had brief weekly goal-setting communication with study staff, either by text or by telephone, to discuss the previous week’s Fitbit step counts and to set a goal for the following week. The Fitbit app and goal setting sessions allowed intervention participants to view their progress toward their individualized step count goal, as well as provide the ability to incrementally increase PA to meet or maintain population recommendations for adults.

Buddy System

Intervention participants were given the option to choose a “buddy”, an adult family member or friend, who would provide encouragement and support to the participant throughout the intervention. To further encourage camaraderie and improve PA outcomes, the buddies were provided with their own Fitbit device and account to share their PA goals and accomplishments with their partner.

Qualitative Analysis

All intervention participants were approached for the qualitative interviews after they had completed the intervention and outcome assessments. A trained staff member conducted one-on-one phone interviews with intervention participants to evaluate the acceptability and usefulness of the intervention, as well to collect feedback about experiences with the Fitbit and mobile app, the Facebook group, goal setting activity, buddy system, and overall perceptions of the study. The interviewer used a standardized script that was developed based on guidelines by Krueger et al.¹⁴ The interviews contained 16 open-ended questions, as well as prompts and probes based on participant response (Table 1). Questions explored facilitators and barriers regarding participant experiences with the intervention, solicited suggestions to improve the intervention, and asked about satisfaction with the intervention.

Completed interviews were transcribed verbatim. Two staff members independently coded all of the interviews to ensure accuracy. Using the principles of deductive thematic analysis, staff members extracted quotes from the transcripts to fit 3 predetermined categories: *facilitators*, *limitations*, and *suggestions*.¹⁵ A third staff member, who also reviewed the transcripts, resolved inconsistencies between the coding staff and further refined categories and themes.

RESULTS

All 26 participants in the intervention arm were approached about completing the interview; 13 were completed, 12 did not respond to contact attempts, and 1 declined. Demographic information on participants is presented in Table 2.

Facilitators (Table 3)

Fitbit Flex Device

Most individuals enjoyed wearing the Fitbit Flex device, highlighting its small size, low weight, sleekness, waterproof nature, and ease of use. Most participants found that wearing the device provided a physical reminder to hold oneself accountable for daily exercise. Some participants chose to wear the device while sleeping and showering; this meant they did not have to worry about forgetting to put it on every morning.

Fitbit Smartphone App

Overall, participants found the app to be effective, citing its tracking of sleeping habits and caloric intake, as well as checking in on the overall trend of daily activity, as facilitators. Most participants enjoyed the ability to access this information from their phones, which enhanced their motivation to engage in PA.

Fitbit Facebook Page

Most participants cited the Facebook page as a major facilitator to increasing PA. They enjoyed the aspect of friendly competition and being able to see what other participants were doing to attain their goals. These participants also enjoyed receiving badges for reaching PA milestones. Most participants of the Facebook group cited a sense of unity and emotional support from others who had gone through similar experiences with cancer.

Text Messages

The standardized text messages sent to participants' phones were reported as a facilitator for increasing daily PA. Most participants enjoyed the motivational texts, their positive tone, and the reminders of the benefits of PA.

Buddy System

Most intervention participants chose a "buddy" and selected their spouse, family member, or friend. Some participants enjoyed cultivating friendly competition with their buddy as a means of increasing PA, while others enjoyed having their buddy initiate plans for PA, such as attending a workout class together.

Goal Setting/Motivation

A major facilitator appeared to be goal setting and motivation, both of which made other aspects of the intervention including the Facebook page and buddy system more effective. Most participants enjoyed regular check-ins via text messages, their buddies, and others in their Facebook group. Additionally, seeing others' goals encouraged several participants to try new things they would not have otherwise tried, such as a kickboxing class. Participants cited such encouragement as a facilitator in establishing a sustainable routine of PA.

Enjoyment and Positive Feelings (Post Treatment)

Most participants noted a general feeling of increased wellness over the course of the intervention. These sentiments were attributed not only to increased PA but also to the feeling of taking back control of one's life after battling cancer and undergoing treatment. Some

participants found the intervention to be a facilitator to improving quality of life post-treatment, especially while recovering from harsh effects of the disease and/or treatments.

Limitations (Table 4)

Fitbit Flex Device

Participants discussed several limitations of the device itself, namely its short battery life. A few participants expressed frustration with not being able to engage in certain PA while wearing the device, such as volleyball or boxing. A few participants were reluctant to wear the device as they missed wearing their usual watch in its place.

Fitbit Smartphone App

The main limitation identified by most participants was that the application required regular manual updating, which resulted in some frustration and in one case, freezing of the device. A few participants cited issues with Bluetooth connectivity.

Fitbit Facebook Page

Some participants identified not being active Facebook users as a major limitation. Some individuals checked the page infrequently, while a few did not use it at all.

Text Messages

Most participants found that the automated nature of the text messages was impersonal and repetitive. They noted that it was unclear whether they were expected to respond to the messages.

Not Meeting Goals

A few participants expressed frustration at not meeting goals they had set, resulting in mild feelings of disappointment and sadness.

Suggestions (Table 5)

Fitbit Flex Device

A few participants suggested selecting a similar but more advanced device that had a longer battery life, displayed the time, and tracked heart rate.

Fitbit Smartphone App

Some participants expressed a desire to view other participants' activity levels through the app so that they could feel better connected outside of the Facebook group. A few participants expressed a desire for an app that allowed them to view a full week's worth of activity at a time so that they could see their PA patterns in a larger context.

Fitbit Facebook Page

A few participants suggested allowing the PA buddies to join and participate in the Facebook group.

Text Messages

Most participants suggested finding ways to make the text messages more personal and varied.

Social Media

A few participants suggested Snapchat or Instagram as a possible avenue for this type of intervention, explaining that sharing images is a fun and easy way to connect, share progress, and encourage others to do the same.

More Competitions/Challenges

Most participants enjoyed the challenges and the sense of competition that they provided. Some suggested that a future iteration of the study include more challenges, perhaps set up in groups so that people could get to know one another better.

Other

A few participants suggested that in order to make PA more enjoyable while also building a community, the intervention might include meetup-style activities such as short local hikes.

DISCUSSION

Our qualitative study explored AYA survivors' experiences in a PA intervention from the perspective of facilitators, barriers, and suggestions for improving the intervention. Overall, participants expressed satisfaction with the intervention and noted benefits in multiple areas including greater motivation to be active, a sense of support and belonging, and increased feelings of well-being. Our qualitative feedback echoes that of an earlier Fitbit and Facebook study targeting cancer survivors ages 14-18, which found that the intervention was helpful for PA awareness, goal-setting behavior, and motivation.¹⁶

While the importance of exercise for AYA cancer survivors is well known, this population consistently demonstrates poor adherence to existing PA recommendations.¹⁷ mHealth interventions have been shown to have profound effects on health behavior change in general populations.¹⁸ A meta-analysis of 8 RCT studies found significant benefits of mHealth interventions ranging from weight loss and increased PA to smoking abstinence at 18 months.¹⁸ A Facebook-based PA intervention for AYA cancer survivors ages 18-39 resulted in a significant

increase of light PA, with a majority of participants reporting that they would recommend the program to others.¹⁹

In the past, AYA cancer survivors identified psychosocial limitations and low motivation as barriers to participating in PA interventions.¹⁷ Our study participants consistently spoke about the intervention as providing them with motivation for PA as well as social support via the buddy system and Facebook group, which mitigate these barriers. Most participants cited the buddy system as a major source of motivation to increase PA. One participant was particularly enthusiastic: “It was actually the best part.” This feedback echoes an earlier study, which found that survivors are more likely to engage in healthy behaviors such as PA if their friends or family engage in the activities with them.²⁰ AYA also tend to look to their friends for behavioral and social cues, including those related to PA.²¹ This phenomenon was demonstrated in the FITNET intervention, which found that social support from friends via Facebook was positively related to changes in moderate-to-vigorous PA.²²

Participants [AM5] reported increased motivation as a result of wearing the device. They enjoyed the Fitbit’s unobtrusiveness, accountability from wearing it, and sense of accomplishment for meeting their daily goal, enforcing the importance of a tangible reminder in a PA intervention. Participant feedback was less consistent regarding text messages. One participant found them to be “an excellent reminder, just to be conscious of like hey, you have to set goals and you should actually try to get to them.” Others were blunt: “It felt like there was no one there,” citing the repetitive and impersonal nature of the messages as a barrier to motivation. Those who did not enjoy the messages agreed that they might be improved if made to sound less generic and more personal. This feedback is consistent with studies demonstrating that participants in mHealth

interventions prefer frequent and personalized text messages with a positive and encouraging tone, as well as those that offer strategies and tips for the desired behavioral change.²³⁻²⁵ Two systematic reviews of RCTs offering individual “computer-tailored” feedback showed positive effects in changing health behaviors including PA.^{26,27} Such feedback may improve future PA interventions for our target population.

A few participants expressed their desire to view a full week’s worth of PA at a time. The app does allow users to do this; in the future, staff should be clearer in their description of device and app functionality to participants.[MOU6]

AYA cancer survivors have expressed a desire to connect with others in their situation in the context of health behaviors such as PA, which our intervention appears to fulfill through the Facebook group.¹⁸ The Facebook group received nearly unanimous positive feedback, suggesting that it has the potential for promoting positive exchanges among AYA cancer survivors.

Participants reflected on their favorite aspects: “...the best moments were open-ended questions posed to the group that we talk about some of our favorite activities.” This feedback is reinforced by prior studies, which have demonstrated that mHealth intervention participants engage most with posts that prompt them to provide responses.^{22,28} In addition to incorporating more moderator-initiated posts, future iterations of PA interventions for AYA cancer survivors might be improved by incorporating interactive features such as Facebook polls or group videos.

A few participants emphasized that the Facebook challenges lent a healthy level of competition: “I appreciated the badges” and “I did like the competition...where you broke up the teams.” Participants who did not have a Facebook page tended to not have other social media pages either. If they did, they checked them infrequently as passive readers. Individuals who used

Snapchat and Instagram regularly suggested that the visual nature of these platforms may be useful in sharing “progress pictures” throughout the intervention though they thought that Facebook was still better because most people know how to use it.

Our intervention appeared to help some participants regain a feeling of purpose after completing cancer treatment: “... [the intervention] kind of reminds you that you're still alive...you can't just lay around and just be happy that you lived through it.” Others emphasized the effect of participating in regular PA on mental health and feelings of self-efficacy: “I feel better about myself in general.”

Participants noted feelings of acceptance and support from others in the Facebook group: “...you got to know more people, people that had been through the same experience as far as having to deal with cancer.” Others enjoyed being able to “reach out and cheer each other on.” One participant spoke particularly highly of the Facebook experience: “I think it was just nice that there were other people there saying to you, you made a difference in their life. You're not alone.” Another participant summed up how much the program meant to them: “This is a wonderful opportunity to ease back into an exercise program, or to even start one...to try to kind of reclaim at least a physical activity part of your life...I wholeheartedly support this program.”

This study has limitations. The small sample size and recruitment from a single center means that results may not be generalizable to other AYA cancer survivor populations. Second, the 12-week intervention period may not reflect long-term outcomes. Third, only 13 of 26 intervention participants were interviewed, which introduces the possibility of self-selection bias^[AM7]. Those who joined the study likely wanted to increase their PA, and those who completed the interview

were more likely to have had a positive experience and/or success with increasing their PA. Nevertheless, important information was gained with regard to RCT feasibility and acceptability. Our Fitbit and Facebook intervention for promoting PA among AYA cancer survivors appears to be acceptable and a promising methodology to incorporate into future research. By tailoring interventions to the needs expressed by AYA cancer survivors, future interventions can effectively promote long-term health and improved quality of life for this unique population.

REFERENCES

1. Armenian SH, Landier W, Hudson MM, et al. Children's Oncology Group's 2013 blueprint for research: survivorship and outcomes. *Pediatr Blood Cancer*. 2013;60:1063-1068.
2. Mertens AC, Brand S, Ness KK, et al. Health and well-being in adolescent survivors of early childhood cancer: a report from the Childhood Cancer Survivor Study. *Psychooncology*. 2014;23(3):266-275.
3. Zeltzer LK, Lu Q, Leisenring W, et al. Psychosocial outcomes and health-related quality of life in adult childhood cancer survivors: a report from the Childhood Cancer Survivor Study. *Cancer Epidemiol Biomarkers Prevent*. 2008;17(2):435-446.
4. Hudson MM, Ness KK, Gurney JG, et al. Clinical ascertainment of health outcomes among adults treated for childhood cancer. *JAMA*. 2013;309(22):2371-2381.
5. Liu L, Moke DJ, Tsai KY, et al. A Reappraisal of Sex-Specific Cancer Survival Trends Among Adolescents and Young Adults in the United States. *JNCI*. 2018; doi: 10.1093/jnci/djy140. [Epub ahead of print]
6. Roberts AL, Fisher A, Smith L, Heinrich M, Potts HWW. Digital health behaviour change interventions targeting physical activity and diet in cancer survivors: a systematic review and meta-analysis. *J Cancer Surviv*. 2017;11(6):704-719.
7. Zhang FF, Saltzman E, Must A, Parsons SK. Do childhood cancer survivors meet the diet and physical activity guidelines? A review of guidelines and literature. *Int J Child Health Nutr*. 2012;1(1):44-58.

8. Smith WA, Nolan VG, Robison LL, Hudson MM, Ness KK. Physical activity among cancer survivors and those with no history of cancer- a report from the National Health and Nutrition Examination Survey 2003–2006. *Am J Transl Res*. 2011;3(4):342–350
9. Paxton RJ, Jones LW, Rosoff PM, Bonner M, Ater JL, Demark-Wahnefried W. Associations between leisure-time physical activity and health-related quality of life among adolescent and adult survivors of childhood cancers. *Psychooncology*. 2010;19(9):997-1003.
10. Schmid D, Leitzmann MF. Association between physical activity and mortality among breast cancer and colorectal cancer survivors: a systematic review and meta-analysis. *Ann. Oncol*. 2014;25(7):1293–1311.
11. Smith A, Anderson, M. Social Media Update 2018. Washington, DC: Pew Research Center; 2018.
12. Laranjo L, Arguel A, Neves AL, et al. The influence of social networking sites on health behavior change: a systematic review and meta-analysis. *J Am Med Inform Assoc*. 2014;22(1):243-56.
13. WHO Library Cataloguing-in-Publication Data. mHealth: New horizons for health through mobile technologies: second global survey on eHealth. Volume 3. Section 1.1, page 14.
14. Krueger R. Developing Questions for Focus Groups: Focus Group Kit #3. Thousand Oaks, CA: Sage Publications, Inc.;1998.
15. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2): 77-101.

16. Mendoza, JA, Baker, KS, Moreno, MA, et al. A Fitbit and Facebook mHealth intervention for promoting physical activity among adolescent and young adult childhood cancer survivors: a pilot study. *Pediatr Blood Cancer*. 2017; 64:e26660. <https://doi.org/10.1002/pbc.26660>
17. Rabin C, Simpson N, Morrow K, Pinto B. Behavioral and psychosocial program needs of young adult cancer survivors. *Qual Health Res*. 2011 Jun;21(6):796-806.
18. Mita G, Ni Mhurchu C, Jull A. Effectiveness of social media in reducing risk factors for noncommunicable diseases: a systematic review and meta-analysis of randomized controlled trials. *Nutr Rev*. 2016;74(4):237–247.
19. Valle CG, Tate DF, Mayer DK, Allicock M, Cai J. A randomized trial of a Facebook-based physical activity intervention for young adult cancer survivors. *J Cancer Surviv*. 2013;7(3):355–368.
20. Wu YP, Yi J, McClellan J, et al. Barriers and Facilitators of Healthy Diet and Exercise Among Adolescent and Young Adult Cancer Survivors: Implications for Behavioral Interventions. *J Adolesc Young Adult Oncol*. 2015;4(4):184-91.
21. Morrissey JL, Janz KF, Letuchy EM, Francis SL, Levy SM. The effect of family and friend support on physical activity through adolescence: a longitudinal study. *Int J Behav Nutr Phys Act*. 2015;12(1):103.
22. Valle CG, Tate DF, Mayer DK, Allicock M, Cai J. Exploring Mediators of Physical Activity in Young Adult Cancer Survivors: Evidence from a Randomized Trial of a Facebook-Based Physical Activity Intervention. *J Adolesc Young Adult Oncol*. 2015;4(1):26-33.

23. Spears CA, Bell SA, Scarlett CA, et al. Text Messaging to Enhance Mindfulness-Based Smoking Cessation Treatment: Program Development Through Qualitative Research. *JMIR Mhealth Uhealth*. 2019;7(1):e11246. Published 2019 Jan 7. doi:10.2196/11246
24. Kerr DA, Harray AJ, Pollard CM, et al. The connecting health and technology study: a 6-month randomized controlled trial to improve nutrition behaviours using a mobile food record and text messaging support in young adults. *Int J Behav Nutr Phys Act*. 2016;13:52. Published 2016 Apr 21. doi:10.1186/s12966-016-0376-8
25. Abrams LC, Ahuja M, Kodl Y, et al. Text2Quit: results from a pilot test of a personalized, interactive mobile health smoking cessation program. *J Health Commun*. 2012;17 Suppl 1(Suppl 1):44-53.
26. Broekhuizen K, Kroeze W, van Poppel MN, Oenema A, Brug J. A systematic review of randomized controlled trials on the effectiveness of computer-tailored physical activity and dietary behavior promotion programs: an update. *Ann Behav Med*. 2012;44(2):259-86.
27. Kroeze W, Werkman A, Brug J. A systematic review of randomized trials on the effectiveness of computer-tailored education on physical activity and dietary behaviors. *Ann Behav Med*. 2006;31(3):205-23.
28. Hales SB, Davidson C, Turner-McGrievy GM. Varying social media post types differentially impacts engagement in a behavioral weight loss intervention. *Transl Behav Med*. 2014;4(4):355-62.

TABLES

Table 1. Qualitative Interview Questions

Question 1	What worked well with using the Fitbit Flex device?
Question 2	What didn't work well with the device and how can we improve it?
Question 3	Did you enjoy wearing and using the Fitbit Flex device? (If yes) why? b. (If no) why not?
Question 4	Would you recommend the Fitbit Flex device to your friends? (If yes) why? b. (If no) why not?
Question 5	What worked well with using the Fitbit smart phone app?
Question 6	What didn't work well with the Fitbit smart phone app and how can we improve it?
Question 7	How else did you view your Fitbit activity besides on the smart phone app (Fitbit website on a computer or laptop; Fitbit app on a tablet or iPad)? Which way do you prefer and why?
Question 8	What worked well with the Fitbit Facebook page?
Question 9	What didn't work well with the Fitbit Facebook page and how can we improve it?

Question 10	<p>What, if any, social network sites or apps do you use? [If helpful, provide examples: Some other common social network options include Twitter, Instagram, Pinterest, Snapchat, Vine, or Tumblr.] If the participant only uses Facebook or does not use any social networking sites, skip to question 11. For each site or app the participant mentions, follow up with 10a, 10b, and 10c individually.</p> <p>a) How often do you use each of those sites or apps? [examples include: several times a day, about once a day, 3-5 days a week, 1-2 days a week, every few weeks, rarely]</p> <p>b) In your daily life, what do you use social media for? Examples: posting photos, sharing your comments/discussing, following others' posts, sharing news stories, messaging others, etc.</p> <p>c) Would any of those sites or apps work well for this program? What features would make them a better/worse fit than Facebook?</p>
Question 11	<p>Semi-daily text messages</p> <p>a. What worked well with the semi-daily text messages?</p> <p>b. What didn't work well with the semi-daily text messages and how can we improve them?</p> <p>c. Are there any text messages in particular that were helpful or not helpful?</p> <p>d. How can we improve them?</p>

Question 12	<p>Did you ask someone to be your buddy to provide encouragement and support for physical activity for this study? Why or why not? (If no, skip to question 13)</p> <p>a. Why did you choose that individual? b. What worked well with having a buddy? c. What didn't work well with having a buddy and how can we improve it?</p>
Question 13	<p>What are positive things about participating in this program for young adult cancer survivors?</p>
Question 14	<p>What are negative things about participating in this program for young adult cancer survivors?</p>
Question 15	<p>Would you recommend this program to other young adult cancer survivors?</p>
Question 16	<p>What can we change about this program to make it more fun or helpful for young adults in the future?</p>

Table 2. Participant Demographics

	(n = 13)
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Gender	n	%
Male	4	(31)
Female	8	(61)
Nonbinary	1	(8)
Race		
Hispanic (any race)	4	(31)
Non-Hispanic White	6	(46)
Asian-American	1	(8)
Other	2	(15)
Education		
High School or less	1	(8)
Some college/associates/vocational	7	(54)
Bachelors/postgraduate	5	(38)
Age		
20-29	2	(15)
30-39	11	(85)
Age in years, mean (SD)	33.8	(4.3)

a. Income totals do not equal 100 due to rounding

Table 3. Representative quotes for each theme in the Facilitators category. [AM10]

Theme	Representative Quotes
Fitbit Flex Device	<ul style="list-style-type: none">· “There’s that built-in accountability, the daily reminder, it’s a physical representation for me, oh you gotta get your steps in.”· “It’s like a mental cue, every time you look at it you feel like you're doing something positive for yourself.”
Fitbit Smartphone App	<ul style="list-style-type: none">· “The smartphone app is pretty handy to know if you’re on track for your goals...seeing the trends of your activity...being able to join other groups...compete against people.”
Fitbit Facebook Page	<ul style="list-style-type: none">· “I really enjoyed communicating with the other participants and seeing...their daily progress and if they had a bad day being able to boost them up or if you had a bad day having the same encouragement.”· “You got to know more people, people that had been through...the same experience as far as having to deal with cancer.”

Text Messages	<ul style="list-style-type: none"> · “Every time I got a text I would definitely remember that I was wearing the Fitbit and I did need to get out and exercise.” · “It actually did get me from just sitting there and go do things, go walk around or go to the gym for a half hour.”
Buddy System	<ul style="list-style-type: none"> · “Sometimes it’s helpful to have a friend along for the ride.” · “The fact that I did it with my friends who saw me through cancer diagnosis and treatment was really special.”
Goal Setting/Motivation	<ul style="list-style-type: none"> · “I feel like I can personally approach physical goals a little better.” · “You can get out and make yourself better after getting treatment...”
Enjoyment and Positive Feelings (Post Cancer Treatment)	<ul style="list-style-type: none"> · “...I felt like it was a little bit more stabilizing...sometimes having gone through cancer I feel like there’s a part of you that kind of feels out of control...if you can at least take one element and gain back a little bit of that, I felt like that was just helpful to kind of emotionally put me in a better place.” · “You have to start somewhere...this is a good starting place...got that sense of community, that sense of accountability...just starting to move, kind of embracing life gain.”

	<ul style="list-style-type: none"> · “I didn’t realize how exhausted I would still be after treatment...this was a great way to slowly start getting back into an exercise program...anyone can really honestly do it.”
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Table 4. Representative quotes for each theme in the Limitations category.

Theme	Representative Quotes
Fitbit Flex Device	<ul style="list-style-type: none"> · “I did have to charge mine every night, it didn’t last more than one day for me.” · “It felt like something that I was always forgetting.”
Fitbit Smartphone App	<ul style="list-style-type: none"> · “I had to like manually update it all the time which was kind of annoying.”
Fitbit Facebook Page	<ul style="list-style-type: none"> · “...Facebook wasn’t especially appealing [because] the elephant in the room was that the main thing we all had in common was that we’d had cancer in the past, and that’s a weird commonality to have with strangers...it felt unaddressed.” · “I actually do not have Facebook so I never joined.”

Text Messages	<ul style="list-style-type: none"> · “...it was the same exact wording in the message every single time, so it almost seemed like robotic.” · “...it doesn’t seem genuine when it’s generically populated.”
Not Meeting Goals	<ul style="list-style-type: none"> · “...if you were not performing like other people in the group it may like make you depressed...might make you feel like crap...” · “It could be stressful. Especially if people aren’t meeting their goals and they’ve got other aspects of recovery and life challenges.”

Table 5. Representative quote for each theme in the Suggestions category.

Theme	Representative Quotes
Fitbit Flex Device	<ul style="list-style-type: none"> · “...the heart rate option are [sic] nice to have, I think like the ones that track how many stairs you walk are helpful...it gives more information...” · “...I think there are other devices out there, different models that have different features, more advanced equipment that could add another fun dimension of participating in the study...the ultra HR.”

<p>Fitbit Smartphone App</p>	<ul style="list-style-type: none"> · “It would be nice if you could have the Fitbit app automatically post your steps to some kind of a custom group...kind of a cumulative miles per week.” · “I think that it would be neat to actually be able to see other people’s activity levels.”
<p>Fitbit Facebook Page</p>	<ul style="list-style-type: none"> · “...if there was some way to encourage...[buddies] to use Fitbits or to get exercise in tandem then that might be helpful...”
<p>Text Messages</p>	<ul style="list-style-type: none"> · “Maybe making that a group thing where you could see what everybody else’s plan for the day is...might give somebody else a better idea of something to do.” · “I would not send out messages if you’re not going to respond back to them.”
<p>Social Media</p>	<ul style="list-style-type: none"> · “The reason why I like Snapchat is because it’s a quick little snap, like for example sharing progress picture [sic] of yourself that you don’t want to see in Facebook in five years...I still think Facebook is the best type [of social media platform] for this study.”

<p>More Competitions/Challenges</p>	<ul style="list-style-type: none">· “...maybe give us different little challenges, like little group challenges that we could do.” · “Competition is good.”
<p>Other</p>	<ul style="list-style-type: none">· “...set up an activity that people can do together, like a hike... could be a motivational thing I think, it would help people be active.” · “The next logical step is like establishing a community that goes beyond the study...how can you continue the experience?”