

Evaluating the Usability of an Exercise Guide Program for Breast Cancer Survivors

Soo Yeon Lee

Learning Design and Technology

leesooy@hawaii.edu

<https://leesooy.wixsite.com/farexercise>

Abstract: One in eight U.S. women may be diagnosed with breast cancer in her lifetime. As the number of cancer survivors increases, survivorship should include, but not limited to, long-term care, recurrence prevention, and quality of life. Exercise is a key factor in achieving a satisfactory post-treatment life; nonetheless, a large population of breast cancer survivors remains physically inactive. Inadequate exercise information for survivors whose medical conditions are different from general users increases barriers to adopting physical exercise into their life. The purpose of this research was to evaluate the usability of the exercise guide program for breast cancer survivors to help them meet the exercise requirements recommended by the World Health Organization. The website was designed with Case-Based Learning and the American College of Sports Medicine Roundtable and evaluated by five principles of Nielsen's heuristics. Ten participants evaluated the ease-of-use of the navigation and validation of the exercise plan in visual design, navigation, contents, and effectiveness of the website. Quantitative and qualitative data were analyzed using descriptive statistics during three iterated rounds. Results indicated the importance of simplicity and user interaction in improving user satisfaction. Further study focuses on young survivors' unique needs in balanced exercises.

Statement of the Problem

There were an estimated 15.5 million cancer survivors in the United States in 2016 and is expected to escalate to 20.3 million by 2026, according to the National Cancer Institute statistics (2018). As the cancer survival rate increases gradually, achieving a satisfactory post-cancer life has been an impetus for survivors focusing on effective long-term care, recurrence prevention, and quality of life. A recent report from the Institute of Medicine found that current cancer programs have rarely provided a clear post-treatment care plan at the end of their treatment. The growing population of survivors faces challenges not only from their current health management but also from long-term health care (Behrend et al., 2014). It is imperative to consider the requests from a growing population of cancer survivors with long-term care such as post-treatment plan, general wellness, emotional health, and an appropriate exercise plan.

Numerous studies have agreed that engaging and maintaining physical activity during post-cancer life can reduce the risk of cancer recurrence. Moderate aerobic exercise of 150 minutes per week is suggested by the American Cancer Society as well as the World Health Organization (2018) as a minimum requirement for cancer survivors to prevent a recurrence. Gunn Ammitzboll et al., (2016) discovered that survivors who exceeded a minimum exercise requirement have a 44% of recurrence risk reduction than those who are inactive. To highlight the evident association between physical activity and post-menopausal breast cancer risk,

Friedenreich (2011) emphasized the benefits of 300 minutes of exercise per week. This amount of exercise can lower the recurrence rate, strengthen emotional well-being, as well as improve the quality of life. Therefore, the purpose of this usability study is to evaluate the ease-of-use of the navigation and the exercise plan in the Exercise guide program for breast cancer survivors to help them meet the 150 minutes a week minimum exercise requirement recommended by the World Health Organization (WHO).

Despite the well-known benefits of exercise, a large population of breast cancer survivors remains physically inactive following treatment. According to the study of 548 breast cancer survivors (Lucas et al., 2017), 74% of participants were consistently minimally active, followed by moderately active 22%, and highly active 4%. To address these high rates of physical inactivity, an online exercise program can be an ideal technology intervention, where free videos and resources are ubiquitously available. Popular and major exercise websites have recognized this need, spotlighting a general sense of well-being emphasizing youthful appearance for a general audience. Contrary to popular belief, survivors' needs and preferences for the physical activities should be designed in a way that will allow users to choose what is needed to help them exercise safely. Despite disparities in the current trend and survivor's needs, survivors should feel comfortable following safety rules and finding the most applicable exercise for their condition.

Literature Review

Survivor Groups. The National Cancer Institute (2018) defines a cancer survivor as one who remains alive and continues to function from the time of cancer diagnosis until the end of life. As cancer patients transition to survivors at the end of their treatments, they are often lost in the transition to the next step (Hahn & Ganz, 2011). Post-treatment care such as exercise and diet plans still remains a passive phase, whereas preventive cancer care and treatments have innovatively improved.

According to the study of 230 participants, 98% of participants sought further information on survivorship care; however, 82% of them did not receive adequate information, but they were given the list of symptoms to watch for (76%) and a summary of the treatment received (70%) (Kinnane et al., 2016). Therefore, a substantial number of survivors were often found inactive due to many attributions such as: “psychological barriers (lack of motivation, fears, dislike of gym, not being the 'sporty type'), physical barriers (the ageing process, cancer treatment and other physical co-morbidities, fatigue and weight gain) and contextual and environmental barriers (employment, traditional female caregiving roles, access to facilities, seasonal weather)”(Hefferon et al., 2013, p.5).

Online exercise program. By examining these obstacles, online exercise programs emphasize the urgent need of alleviating their obstacles of time flexibility and location accessibility. While the major fitness trends are focusing on effectiveness such as High-Intensity Interval Training (HIIT), clinical populations with a medical condition are at high risk of a potential injury with HIIT, according to the survey (Thompson, 2017). Watkins Davis and Oakley-Girvan (2017) suggested that online health programs need to be more carefully tailored to suit the long-term goals of medical users as well as developing features that will be approved by healthcare practitioners. To respond to a deficiency of tailored safety guidelines in online exercises for

breast cancer survivors, this study was developed through an understanding of what is considered the three essentials of fitness: flexibility, aerobic, and resistance training (Curry et al., 2019).

In order to support safety guidelines and an applicable online exercise program, the prototype website was framed with three literature reviews: Three core exercises, American College of Sports Medicine Roundtable, and Case-Based Learning theory.

The balance of flexibility, aerobic, and resistance training is the core principle that sparks a synergy effect that can reduce body fat, increase bone density, and reduce the risk of injury (Curry et al., 2019). The American College of Sports Medicine's Roundtable (Schmitz et al., 2010) suggested each of these exercises for substantial health benefits for the general audience. It also means that if the safety guidelines are prioritized for them, cancer survivors can perform the exact same physical exercises that healthy adults can (Wolin et al., 2012). That said, many survivors can safely perform a range of exercise programs from light to moderate and to intense by following safety guidelines or/and doctor's directions.

To deliver content in an effective way, three case scenarios were associated with exercise objectives, exercise suggestions, and safety guidelines. Case-Based Learning is often used in various fields in healthcare to promote learners' higher levels of cognition (McLean, 2016). When a realistic hypothetical case relevant to their health issues is introduced to learners, their interests can be stimulated, and long-term retention of knowledge can be improved by examining their current health condition. Once learners apply their knowledge to real-life situations, not only do their comprehension increase but their adaptability of learning increases as well (McLean, 2016).

Once the prototype website was created with analyzed contents, it was evaluated to identify its ease-of-use of navigation and enhance user satisfaction with the user interface tool using Nielsen's Heuristics evaluation (Nielsen, 1995). Delivering great user experiences and satisfaction in an accessible way should be the main goal of a usability test (Krug, 2010). The delivery method of the exercise program should meet all core values of the learning process: learnability, accessibility, and adaptability. This usability test benefits not only problem identification, but also further refinement as the act of problem identification leads to suggestions concerning their rectification (Mills & Noyes, 2016).

Methodology

Research Questions/Goals. This usability study had two primary research questions:

- (1) How easy was it for users to navigate the CHOOSE FAR page to find suitable exercise safety guidelines once they select their exercise types?
- (2) How easy was it for users to create their own exercise weekly plan to adhere to their learned exercise types?

Content Analysis. "FAR exercise guide", the prototype website, symbolizes the importance of Flexibility, Aerobic, and Resistance (FAR) training. The content map consists of four components: case scenarios, exercise safety guidelines, exercise activities, and exercise plan. These four components were delivered as Stories, Safe FAR, Choose FAR and Plan FAR.

Additionally, creating a weekly plan using a fillable form is the final output in which the three exercise types were consolidated. *Figure 1* is a content map of FAR Exercise Guide.

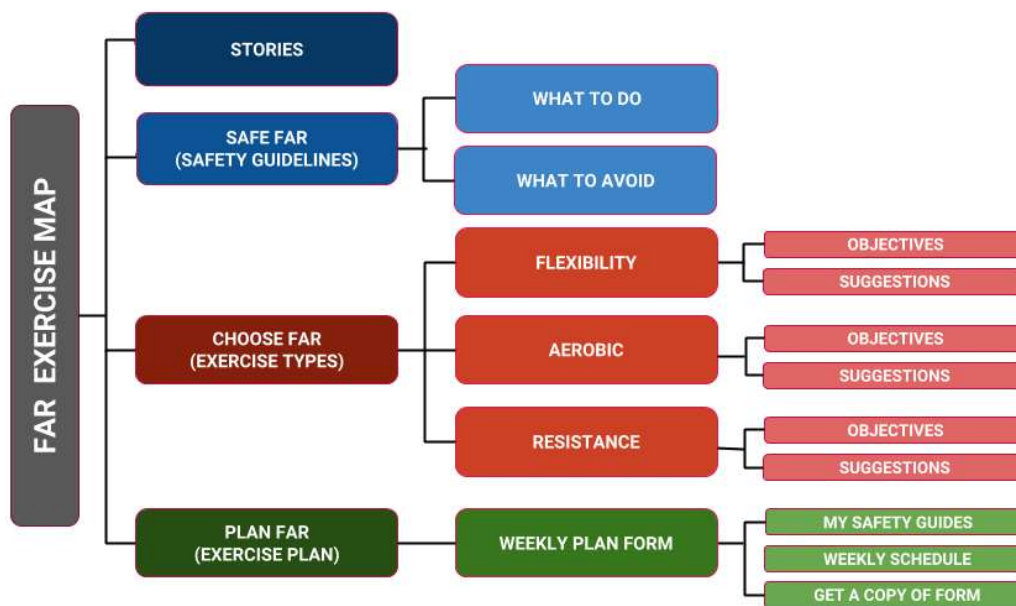


Figure 1. F.A.R. Exercise Guide Content Map.

The survivors' case scenarios were added to the front of the homepage to trigger a user's curiosity and give relevance to their case, according to CBL. Safe FAR prioritized two traits of the exercise safety guidelines to ensure a potential solution to injuries, along with what exercise is helpful and what exercise should be avoided for survivors who had previous treatments as recommended by the American College of Sports Medicine's Roundtable. Choose FAR offered three core training: flexibility, aerobic fitness, and resistance exercises. Each section involved objectives and exercise suggestions recommended by the American College of Sports Medicine Roundtable. Plan FAR introduced an adaptable fillable form for users to incorporate their exercises chosen from Choose FAR. The form offers choices of exercise duration recommended by WHO, and choices of exercise types adapted to a user's physical strength and time availability. This efficiently structured form can remind users of their weekly goal and eventually promote their regular exercise routine. Aligning these four components in chronological order was a dynamic process that was designed to result in positive adjustment and adaptation after exposure to a variety of cases and exercise types.

Recruitment and Participants. The target audience of this study are people in a breast cancer survivorship plan. The National Cancer Institute (2018) defines survivorship as including physical, psychosocial, and economic issues of cancer, beyond the diagnosis and treatment phases. The definition of survivorship has expanded to the ability to obtain health management such as a follow-up treatment, exercise, diet, and quality of life. Therefore, a range of people in a survivorship plan can expand to survivors themselves, co-survivors such as family members, friends, and caregivers who gave psychological, physical, financial and emotional support, according to National Cancer Institute (2018).

The recruitment process was held for 6 weeks from January to February 2019 with individual recruitment emails (Appendix A) to support groups. The first recruited group was an offline-based breast cancer support group in a local church. Members in the group shared common interests on established guidelines for good health habits such as exercise; however, only a few showed their interests during Round 1. It was urgent to expand the pool of participants to increase recruitment volume as the second round approached soon. The second group was a Facebook-based online breast cancer community whose members consist of young survivors and co-survivors that volunteered for the study. A total of 6 breast cancer survivors and 4 co-survivors volunteered to join a study session. Five out of six survivors were in their 20's to 40's, considered as young survivors whose prognosis were different from older survivors. During the recruitment process, the researcher introduced a short verbal description of the study to members and sent a recruitment email to each group member as well as posted a recruitment letter to the online discussion board of an online group with the group coordinator's permission. The recruitment method for the second group of participants was posting a recruitment flyer to the online discussion board. As the eligible participants were voluntarily emailing back to join the study, a link of the pre-screening questions was sent to them.

Their age, job, educational background, and socioeconomic level vary; however, they were currently free from a cancer diagnosis and physically able to exercise 150 minutes a week. They were able to participate in support meetings on and offline, capable of searching health-related research using the Internet, and able to follow the online tutorial direction and share information via social media. They were also able to comprehend and discern what exercises would be damaging or beneficial, and how to apply and synthesize chosen exercise into their condition. Lastly, their affective empathy always showed support to other survivors emotionally. Table 1 shows the age groups of participants.

Table 1. Participant Demographics (n=10)

Age	Survivors	Co-survivors	Current treatments	Total
26-35	2	0	0	2
36-45	3	2	0	5
46-55	0	2	0	2
56-65	1	0	0	1
All Participants	6	4	0	10

Note. Values represent numbers of participants.

Evaluation Instruments. The evaluation instruments consisted of pre-and post-questionnaires, a series of scenarios containing task questions, interview questions, and an observation log during a one-on-one session. The first tool used in the study was pre-screening questions (Appendix B), which played a decisive role in recruiting qualified participants. Its questions clarified the qualifications of the study by ensuring they were not currently patients, free from active treatments, and willing to learn exercises. All information in the pre-screening was not used as

data. As they were screened, a consent form informed them of the study procedure, study benefits & risks, privacy & confidentiality (Appendix C). The Consent Confirmation email (Appendix D) and Meeting Reminder email (Appendix E) were followed accordingly.

A pre-questionnaire (Appendix F) was provided to collect their demographics, online exercise experiences, exercise engagement, and awareness levels of safety guidelines. It poses questions like “How often do you exercise?”. These pre-session steps helped the participant perceive a general idea of the prototype and familiarize themselves with their upcoming session. As a session began, participants were asked about the first impression of the website with preliminary questions (Appendix G) like “What would like to click on the homepage?”. By following the usability protocol (Appendix H), they were asked to fulfill tasks focused on the navigations of homepage, contents, fillable form, and contact method on the prototype website. As the completion of task questions, they were asked open-ended interview questions (Appendix I) to provide their in-depth feedback such as “What did you like best about this website?”. Additionally, measuring time to answer each task was another qualitative source to identify navigation issues. During a task session, measuring the severity and frequency of problems that participants encountered were critical in improving its usability using the list of problems with severity scale (Appendix J) and the list of recommended change (Appendix K). In order to collect in-depth feedback about their website experience, a post-questionnaire (Appendix L) measured their latent constructs in terms of attractiveness, design layout, navigation, effectiveness with 5-point Likert scales.

Quantitative and qualitative data were collected using Google Forms which converted to a spreadsheet view of the collected data. The data were interpreted with graphs and charts which visualized the results, making it easier to compare mean scores and create the listed navigation problems.

Website Design Strategies. The website was designed with multiple open resources which royalty-free for educational purposes; video conferencing platform Zoom provided session recordings; sophisticated visuals from Pixabay and the website builder WIX attracted users’ curiosity; and YouTube provided a variety of exercise options which were accessible to the public. Additionally, Google Forms was initially incorporated into a Weekly Plan fillable form in the website, but later was replaced with a WIX user input form due to its limited user interaction options. The reason for choosing those deliverables was based on guidelines of Rocket Surgery Made Easy by Steve Krug (2010) and Nielsen’s Usability Heuristics (Nielsen, 1995).

Krug’ suggestion was used to create a list of usability conventions when developing the study design: what to test through task questions, how to decide what to fix, and test protocol. Heuristics principles of usability evaluation by Nielsen (1995) upgraded the website in the purpose of interactive design. The following are the selected five principles that inspired the visual design, navigation, and layout of the website.

(1) *Matching the System with a Real-Life Situation:* Three case scenarios based on CBL were incorporated into the exercise contents and presented as real-world conventions that trigger the user’s curiosity and relevant feelings.

(2) The User Control and Freedom Principle: The fillable form in the PLAN FAR gave users control to build their weekly plan by choosing options of exercise activities and dates.

(3) Consistency and Standards: The layout of the buttons, color schemes, font sizes remained consistent within the website, while adding more videos.

(4) Minimalist Design: Simplification to deliver information was the main key to enhance navigation and accessibility by decrease unnecessary clicking.

(5) Help and Documentation: Provide a service to help users search for medical terminology as the exercise contents include many medical terms.

Figure 2 shows the homepage of the prototype website built with 5 Heuristics principles.

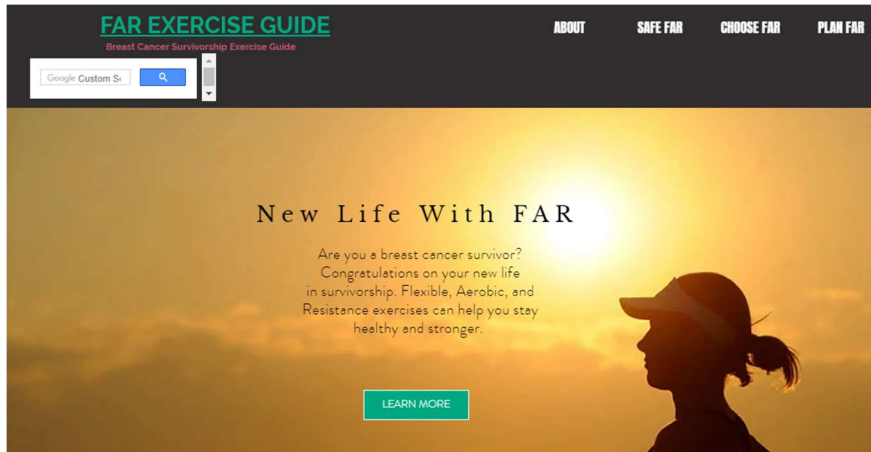


Figure 2: Prototype Website Homepage.

Procedures. The entire usability session protocol followed the guidelines from the Institutional Review Board (IRB) for the protection of human subjects' rights. I was aware of the responsibility of the conduct of research by obtaining the Collaborative Institutional Training Initiative (CITI) training certificates (Appendix M). The usability tests were conducted with three groups of three-to-four participants for 6 weeks from January to February 2019.

Before a session, participants were informed of future risk of study participation which may increase their stress levels if they were not familiar with the exercises listed on the website. Since the study was based on their voluntary participation without compensation, they were informed to have the right to refuse to answer any questions and stop the procedure at their whim without any penalty. On the other hand, they were also informed of the potential benefit which may increase their exercise safety awareness. They were offered study results if they wished. With their permission, their responses during a session were audio- and video- recorded for data analysis. All quantitative and qualitative data was kept confidential in a password-secured computer and were deleted as soon as the analysis was completed. Their names and identifiers were removed in paper and recording only their screen activities, not their face.

One-on-one sessions were held in places based on the participants' preference. A total of 5 participants joined their session in their preferred coffee shop near their home or work, 2 preferred to meet at a school library, and 3 preferred an online meeting. A computer already set up with Zoom was provided to all participants except in online meetings as unexpected technical issues hindered one session from moving ahead. During the sessions, all participants were asked

to think-out-loud while processing their usability test so that their voices were recorded along with their screen activities. The task scenario (Appendix H) followed three criteria to enhance user engagements with the interface: real-life related, actionable, and avoiding-clue tasks (Nielsen Norman Group, 2018). Five tasks in the scenario delivered information that encouraged participants to interact with the interface in a realistic situation, without any given clues of where to click. The usability study script, protocol, and observation log were created with Google Docs modified from Rocket Surgery Made Easy (Krug, 2010).

Each round consisted of three sessions and the website was revised until the desired result was achieved. Revisions implemented after each session focused on urgent issues such as broken links, while round revisions consisted of revamping structural problems of the interface with new designs. *Figure 3* shows the procedures of the usability protocol.

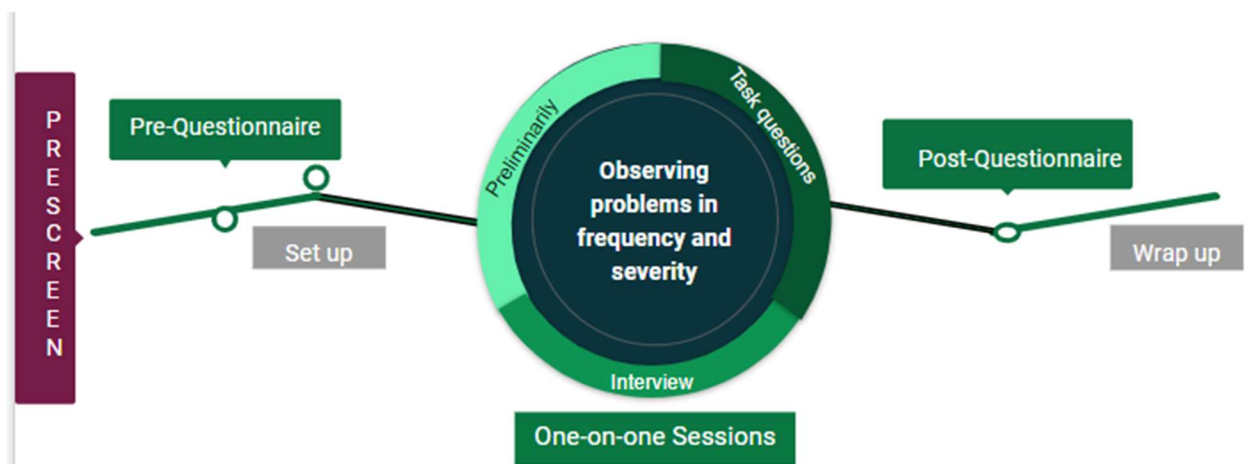


Figure 3: The Procedures of the Usability Protocol.

Results

Online Exercise Experiences. A pre-questionnaire measured participants' Internet experiences, online exercise experiences, and awareness of safety guidelines along with their demographic survey. All participants used the Internet daily for email (90%), social media (80%), and news & research (50%). Despite their familiarity with online activities, only sixty percent of participants were familiar with online exercise programs.

Furthermore, the survey disclosed that ninety percent of participants engaged in exercises on a daily or irregular basis. *Figure 4* indicates that the most popular exercises were aerobic-related: brisk walking (80%), jogging (50%), strength exercise (40%), and stretching (20%). Nonetheless, only 20% of them followed exercise safety guidelines before exercising, while 70% of them sometimes followed and the remaining 10% did not follow the guidelines. This data was interpreted to mean that participants needed to incorporate flexibility and resistance exercises into their routine to balance the three core exercises. Online exercise programs can be a useful tool in exploring a variety of exercises and bring awareness to unpopular exercises that could be greatly beneficial to their health.

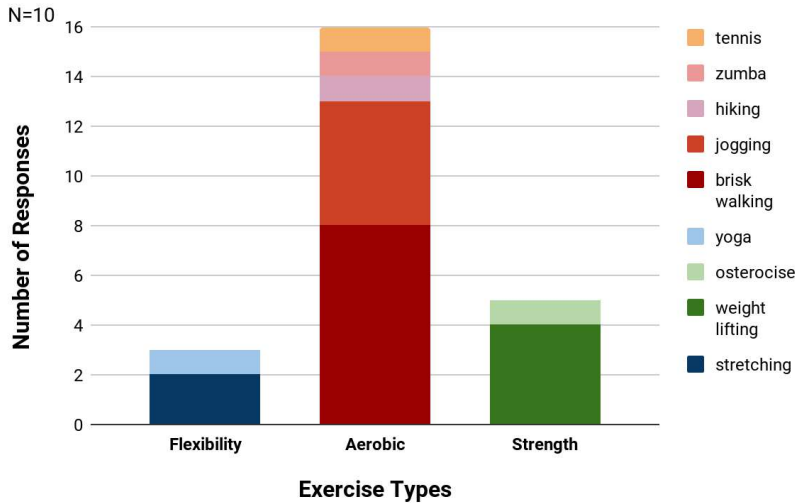


Figure 4: Participants' Exercise Experiences

Task Analysis. The difficulty of the five tasks was evaluated and measured with 6-point Likert scales during the one-on-one sessions; 1 being very difficult and 6 being very easy to complete the task. During an observation of task completion, the researcher analyzed quantitative and qualitative data using three criteria; (1), the route used to access a task; (2), confusion or problems that they encountered; and (3), the way to find a better approach to the task. The task questions were; (1) find the main purpose of the F.A.R. Exercise Guide; (2) find a way to adapt your safety guidelines to your chosen exercises; (3) find suitable strength, aerobic, and stretching exercises that fit your situation; (4) find a way to create your weekly exercise plan and get a copy of your plan; and (5) find a way to search the terms on the website. Figure 5 is a comparison of task mean scores in each round. It reveals that the ratings for navigation and user interaction have gradually improved except for Task 3.

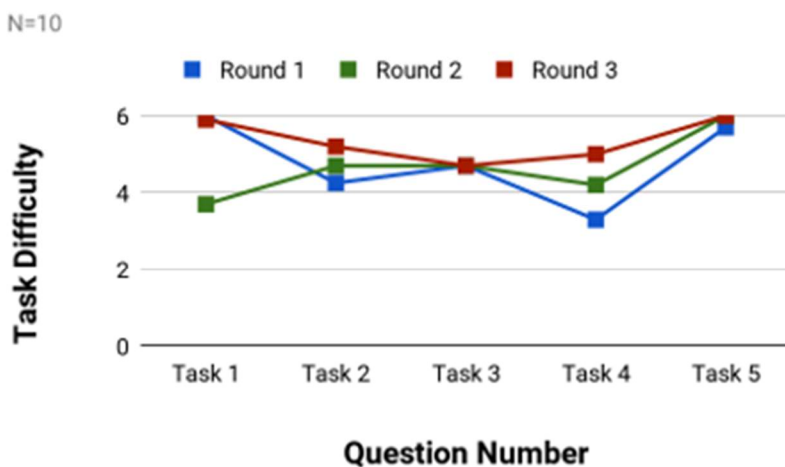


Figure 5: A Comparison of Task Results.

Round 1. Four survivors and two co-survivors were recruited for Round 1; however, three survivors discontinued their participation during a pre-screening step due to complaints about unfamiliar technology-based procedures; therefore, their data was removed as an anomaly. Three remaining participants evaluated the website by completing five tasks. *Figure 6* shows that Tasks



Figure 6: Round 1 Task Results.

1 and 5 were not difficult to complete; however, they completed Task 2 two to three minutes longer than Task 1 and 5. The difficulty experienced in Tasks 2 & 4 was a result of insufficient tutorial directions that caused them to take unnecessary steps and detour routes to find information. To facilitate user's accessibility for Task 2 and 4, the safety guidelines had to be relocated to a new page and a short introduction was added to the front of Exercise plan page to alleviate any confusion on how to get started on a form.

Round 2. Task completion rate in Round 2 moderately increased compared to Round 1 as unclickable buttons were fixed and the safety guidelines were relocated from the Exercise types page to a new page. Two survivors and one co-survivor tested the website. The difficulty level of Task 1 worsened compared to Round 1 because of the overwhelming amount of text. One of the participants noted that irrelevant text hindered the delivery of the main message, by commenting, "information should be given right away". Other than Task 1, all Tasks completion rates

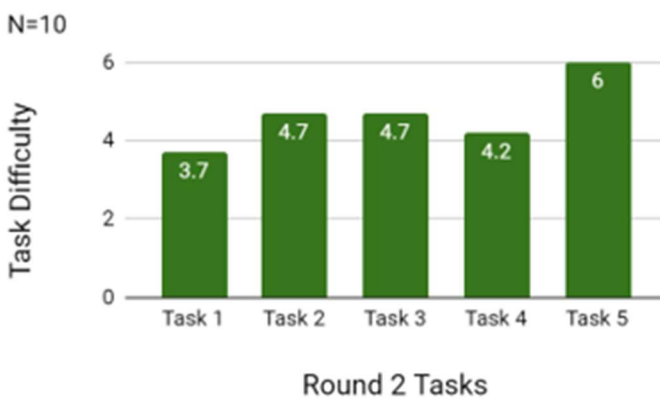


Figure 7. Round 2 Task Results.

improved from 0.5 to 1. However, *Figure 7* shows that the average score of Task 3 remained a 4.7 as it was not easy to access the Exercise page. One participant commented on the lack of alternative access by saying "all the information is there, but more alternative ways are needed to find information." This confirmed that the access issue urgently needed to be solved. Therefore, irrelevant information was removed or relocated from the Exercise page to help users access information in an easier and more effective way.

Round 3. During the final revision, three survivors and one co-survivor concluded that this website was an applicable and worthwhile exercise program for them. *Figure 8* indicates that all task difficulty rates improved or remained the same after revisions. A short introduction was made on the top of each page. After detailed instructions for Task 4 were added, participants were able to easily navigate the fillable form; nonetheless, it was still not considered an effective

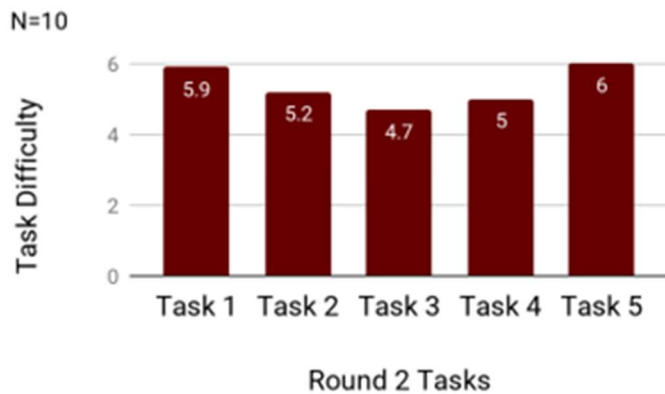


Figure 8. Round 3 Task Results.

form due to a lack of user control. One commented, “the form did not allow me to choose multiple answers or add my own exercise type.” Although it was necessary to increase user-control, adding open-ended answer spaces to the lengthy form would make the form seem even more tedious. Later, checkboxes and open spaces for answers were individually added using WIX user input features to the form to improve its user control and simplicity. Finally, the easiness of Task 4 gradually increased from 3.7 to 5 during the three rounds.

Qualitative Data. I observed participants during sessions by taking notes on how they answered questions and how long it took for them to accomplish tasks. Not only were verbal and behavioral data collected descriptively, but also non-verbal expressions of impression were



Figure 9. Qualitative Data in Word Clouds.

analyzed during each one-on-one session using a severity scale log (Appendix J). This observation process allowed me to increase the validity of the study as well as given me a holistic understanding of the study in context and phenomenon (DeWalt & DeWalt, 2012). *Figure 9* is a word cloud that displays common keywords heard in feedback. Participants praised its contents by commenting “it is a motivation builder to continue my exercise”, “applicable exercises that I can utilize”, or “the story was very relevant to me. I feel I see myself there”. Some criticized by commenting, “too long to scroll down in contents”, “confusing and too many buttons”. In addition, one participant proactively suggested that this exercise plan form could be better with an exercise history feature that helps users find their previous workout data.

Discussion

The main challenge throughout three rounds was participant recruitment. Two out of three survivors in the first round discontinued the study when they were not comfortable with electronic forms and online meetings. This experience gave me a lesson that technology should be not an obstacle, but an easy service to help users. The next two rounds had more success when the computer in which necessary programs for the session were installed was provided to participants during in-person meetings.

According to the post-survey, user satisfaction has improved in aspect of simplicity and user interaction. As shown in Figure 10, the first research question was answered in simplifying the contents of CBL and the American College of Sports Medicine Roundtable. *Figure 10* shows how I simplified the Safety guidelines page by relocating its contents.

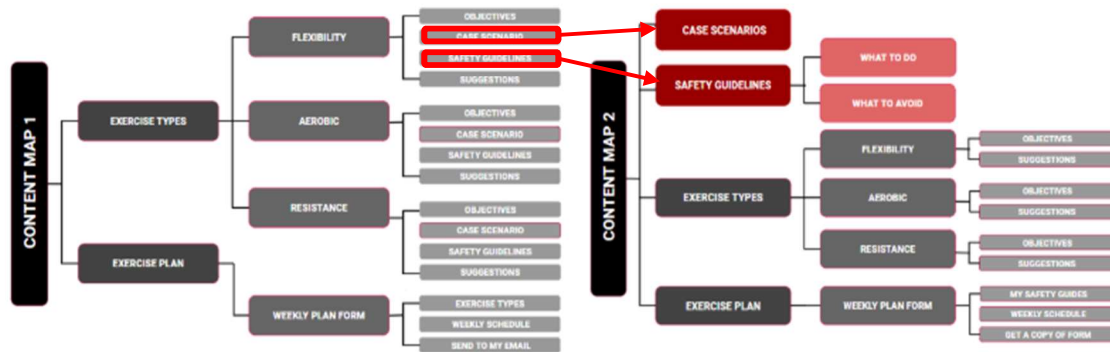


Figure 10. A Comparison of the Original and Final Content Map

The second improvement was made in user interaction. The second research question returned with criticism that the fillable form could have been easier to complete with more user control options, indicating user satisfaction may depend on friendly control options. The followings show how the five principles of Nielsen’s Heuristic Evaluation were applied to improve user-interaction experiences.

(1) Matching the System with a Real-Life Situation. The case scenario was the highlight of the website, as users could connect to the stories. However, users spent a longer time than I expected to find their relevant stories because each story was located on the bottom of each exercise page. Therefore, relocating the stories to a separate page could help users read the stories in an easier way. *Figure 11* shows the usability improvement from the original to the final version.

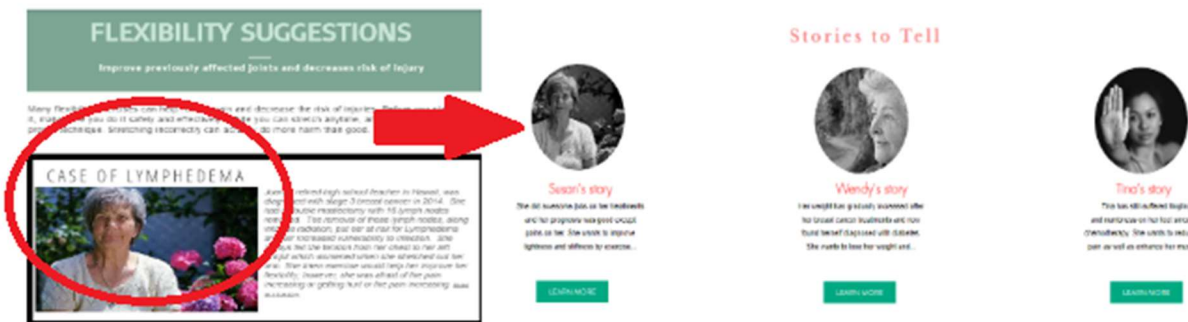


Figure 11. Improvement in Matching Real-Life Principle.

(2) The User Control and Freedom Principle. In order to improve the effectiveness of the exercise plan fillable form, three solutions were implemented; removing distracting buttons, adding a brief introduction, and maximizing open-answer spaces. The form was initially made with Google Forms to provide respondent data for the researcher; however, users found it tedious to fill the lengthy multiple-choice questions which also did not allow them to choose multiple or their own answers. After replacing the Google form with WIX user input features, users were able to choose multiple answers in the checkboxes as well as type their own answers and express their own ideas. *Figure 12* shows how the weekly plan form improved based on the user control principle.

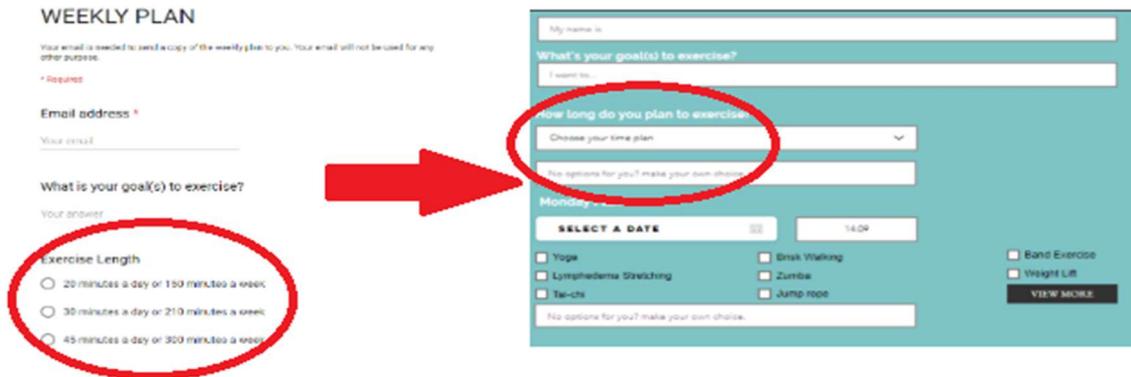


Figure 12: Improvement in User Control and Freedom Principle.

(3) Consistency and Standards. The consistency and simplicity of the buttons, color schemes, and font sizes improved the navigation of the website. According to a post-questionnaire, all participants agreed that the color scheme was uniformly incorporated into the website. *Figure 13* presents how the text-based page transforms into an image and button-driven page. The consistent color scheme shown in buttons helped users to choose the information they wanted in a fast and effective way.

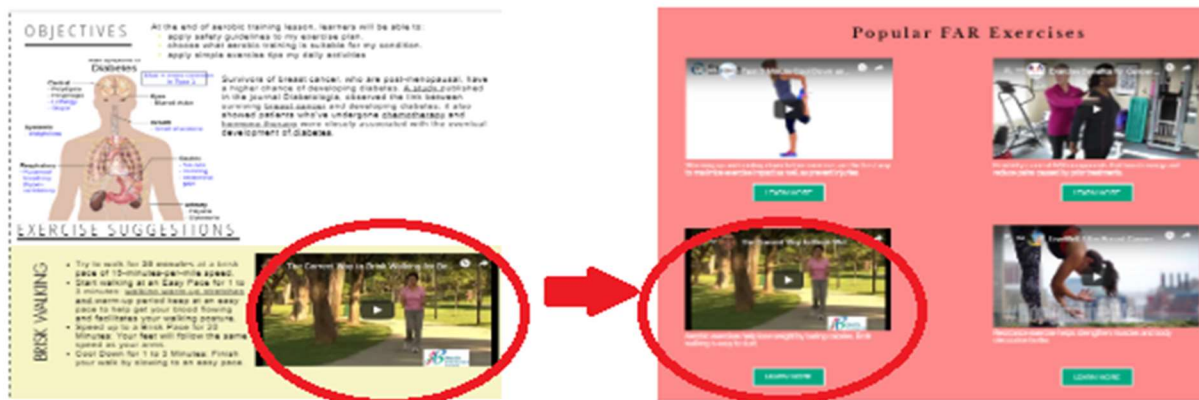


Figure 13: Improvement in Consistency and Standards Principle.

(4) Minimalist Design. In the original design, the buttons on the homepage were not easily detected because of the bland color scheme or unnecessary duplication. As unnecessary buttons were removed and simplified, users found that less time was spent in their searching process.

Figure 14 shows that clear directions and a simplified design led users to focus on information in a direct way.

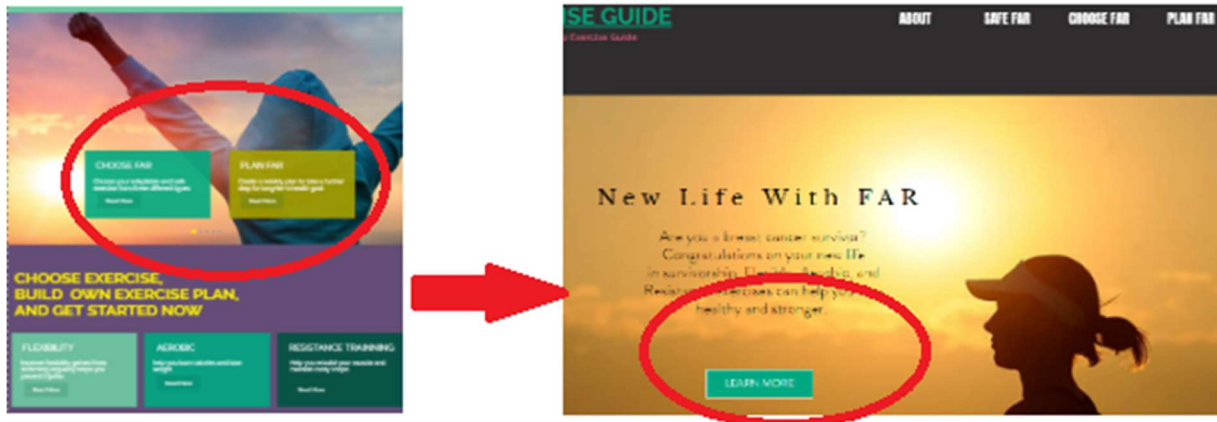


Figure 14: Improvement in In Minimalist Design Principle.

(5) Help and Documentation. The Glossary page was initially provided to assist users in understanding the medical terminology listed on the page. However, user interactions were limited to search their own terms only provided in the glossary. Therefore, replacing the Glossary page with an embedded Google Search tool on the homepage increased user control. Figure 15 indicates the glossary change.

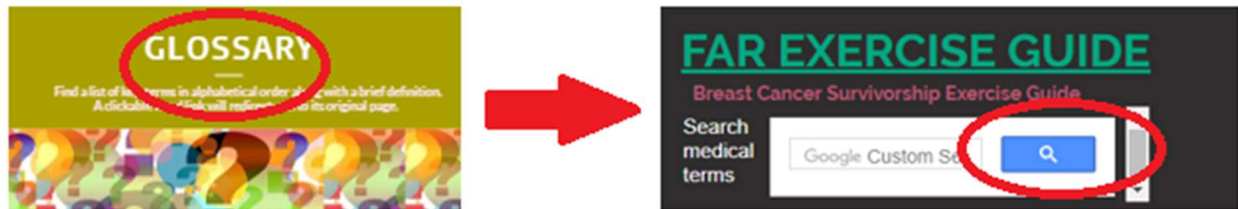


Figure 15: Improvement in Help and Documentation Principle.

Further Study. This project was established to support resilience in cancer survivors, striving to help them recover from previous treatments and lower cancer recurrence. Ninety percent of the participants in this study engaged in exercises and were motivated in improving their exercise habits. This ninety percent translates into a significantly higher exercise rate than about fifty percent of physically-active adults in the U.S., according to the National Center for Health Statistics (2017). These data were further interpreted that those younger survivors more engaged in exercise than older ones. By emphasizing this new trend with young survivors, the next study will focus on addressing their unique needs and preferences in three balanced exercises and diet plans. As a self-advocate of survivorship, I found that support from survivor communities can play a crucial role in improving our survival rates of cancer. I hoped that this research could lay a foundation for improving the resilience of cancer survivorship as the collected data can offer a better understanding of survivors' needs.

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APPENDIX A: **Recruitment Letter**

Evaluating the Usability of the Exercise Website for Breast Cancer Survivors

Are you breast cancer survivor or co-survivor?
Are you interested in learning about exercise and safety guidelines?

If your answers are **YES**, you are invited to the usability study.

Aloha,

My name is Soo Yeon Lee, and I'm conducting a website usability study at the University of Hawaii at Mānoa. The **purpose of this study** is to evaluate its ease-of-use of the navigation and the weekly plan in the FAR Exercise guide for breast cancer survivors to help them meet 150 minutes a week exercise requirement recommended by the World Health Organization.

The usability study will be held on a mutually agreed time and location either in-person or online. Easy setup instructions will be provided so volunteers do not need to worry about their technical skills. All information will be kept strictly confidential. A report of the study will be available to study volunteers.

If you are interested in participating,
Please click on the link below to complete the pre-screening questions.

[Pre-Screening](#)

For more information, please contact leesooy@hawaii.edu.

APPENDIX B: Pre-Screening Questions

Thank you for being interested in participating in my study. Before starting the study, I would like to request you to complete these pre-screening questions to ensure that you are eligible and are able to participate in my study. This study is looking for breast cancer survivors who are willing to test out an exercise website. It takes about 1 minute to complete a total of 3 questions. As soon as you complete it, you will be notified your eligibility for this study by email and asked to sign on the consent form. Please let me know at leesooy@hawaii.edu, if you have any questions regarding the pre-screening procedure. Your pre-screening responses and data will not be analyzed. Please note, it is based on your voluntary participation and you can stop it at any time if you don't feel comfortable. Mahalo.

1. Are you with survivorship?

- Yes, I am a survivor (a person who has completed cancer treatments and has survived)
- Yes, I am a co-survivor (a person who supports a cancer survivor in financial, physical, and emotional ways such as a friend, family, caregiver, or supporter of a survivor)
- No (Please stop here. Sorry, you are not eligible for this study.)
- Other: _____

2. Are you currently undergoing any cancer treatments?

- No
- Yes (Please stop here. Sorry, you are not eligible for this study.)
- Other: _____

3. Are you interested in learning exercises safety guidelines and types?

- Yes
- No (Please stop here. Sorry, you are not eligible for this study.)

APPENDIX C: Consent Form

Aloha! Thank you for completing the pre-questionnaire. You are now eligible to participate in a usability study for an exercise guide website.

My name is Soo Yeon Lee, a graduate student at the University of Hawai'i at Mānoa in the Department of Learning Design and Technology. As part of the requirements for earning my graduate degree, I am doing a research project.

What am I being asked to do?

If you participate in this project, I will meet with you for the one-on-one usability session at a convenient location and time for you. There will be online and offline meeting options for you. If you prefer to join in the meeting without travel hassles, an online meeting will fit for you. If you prefer a face-to-face meeting, I will arrange a convenient location for you.

Taking part in this study is your choice.

Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you. Your choice to participate or not participate will not affect any future activities held in the support meetings.

Why is this study being done?

The purpose of the usability study is to evaluate the ease-of-use of the navigation and the exercise plan in the FAR Exercise guide program for breast cancer survivors to help them meet the exercise requirement recommended by the World Health Organization(WHO). I am asking you to participate because you are a breast cancer survivor or co-survivor.

What will happen if I decide to take part in this study?

First, you will be asked to fill a pre-questionnaire which consists of demographics, Internet usage, and exercise experience questions. The questions will be like "How old are you, What do you do on the Internet, or How often do you exercise?". When you complete it, you will join in the session at your convenient time. The session will consist of 15-20 open-ended questions. It will take 45 minutes to an hour. The session will include preliminary questions, task questions, and interview questions. Preliminary questions ask your impression of the study like, "What were your first impression as you visit this website?". Task questions ask your thoughts about the study usability like, "Please find suitable exercise options regarding your condition on the website." Interview questions ask your usability experiences like, "What did you like best about this website?"

The session will be scheduled at a time and place that is convenient for you. Only you and I will be present during the session interview. With your permission, I will audio-record the session so that I can later transcribe the interview and analyze the responses. You will be one of about 9 to

15 people I will interview for this study. With your permission, I will also video-record your computer activities via during the session so that I can analyze your computer movements during the session. Your face will not be recorded.

What are the risks and benefits of taking part in this study?

I believe there is little risk to you for participating in this research project. Although you do not have to perform any exercises, the potential risk of this study might be increased your stress levels if you are not familiar with exercises listed on the website. If you still feel uncomfortable answering tasks because of a lack of background knowledge on the exercise listed, you can stop the session at any time for any reason without any penalty. Participating in the session is completely voluntary. There will be no direct benefit for you for participating this task session; however, the potential benefit for you is that it may increase your exercise safety awareness and knowledge of more exercise types so that you may boost your regular exercise routine.

Privacy and Confidentiality:

I will keep all study data secure on a password-protected computer. Only my University of Hawai'i advisor and I will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawai'i Human Studies Program has the right to review research records for this study.

After I transcribe the session, I will erase or destroy the audio and video recordings. When I report the results of my research project, I will not use your name. I will not use any other personal identifying information that can identify you. I will use pseudonyms (fake names) and report my findings in a way that protects your privacy and confidentiality to the extent allowed by law

Future Research Studies:

Identifiers will be removed from your identifiable private information. After the removal of identifiers, the data from this study will not be used or distributed for future research studies.

Questions:

If you have any questions about this study, please email me at leesooy@hawaii.edu. You may also contact my advisor, Dr. Catherine Fulford, at (808) 956-3906 or fulford@hawaii.edu. You may contact the UH Human Studies Program at (808) 956-5007 or uhirb@hawaii.edu to discuss problems, concerns and questions; obtain information; or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <http://go.hawaii.edu/jRd> for more information on your rights as a research participant.

If you agree to participate in this project, please put your name, your signature and date this page and reply to your email to leesooy@hawaii.edu.

Keep a copy of the informed consent for your records and reference.

Signature(s) for Consent:

I give my permission to join the research project entitled, *“Evaluating the Usability of Exercise Guide Program for Breast Cancer Survivors”*

Please initial next to either “Yes” or “No” to the following:

_____ Yes _____ No I consent to be audio-recorded for the interview portion of this research.

Please initial next to either “Yes” or “No” to the following:

_____ Yes _____ No I consent to being video-recorded for the interview portion of this research.

Name of Participant (Print): _____

Participant’s Signature: _____

Signature of the Person Obtaining Consent: _____

Date: _____

Mahalo for your participation!

APPENDIX D: Consent Confirmation Email

Aloha,

My name is Soo Yeon Lee. Thank you for sending your consent form for the project. This email confirms that your consent is valid. Please fill up the pre-questionnaire that I attached in this email and send it back to me. As soon as you complete the pre-questionnaire, you will join the website evaluation session at your convenient time and location. This session will take about 45 minutes to an hour. It includes the preliminary questions, tasks, and an interview. After the session, you will be asked to answer a post-questionnaire.

All activity including your voice and your computer screen action during the session will be recorded and analyzed. Please note that your face will not be recorded. All recordings will be stored safely in a password-secured computer and destroyed immediately when the study is complete. Please respond to your preferred schedule and send it back to me.

Preferred round

- Round 1: 1/7/2019 to 1/13/2019
- Round 2: 1/21/2019 to 1/27/2019
- Round 3: 2/4/2019 to 2/10/2019
- Other: _____

Preferred date in the one of your preferred round period: _____

Preferred time: _____

Preferred place:

- Offline: _____
- Online

I will confirm your schedule as soon as possible. If you find that you are unable to meet on your scheduled day, please contact me as soon as possible so that I can reschedule your session. Please feel free to contact me if you have any questions at leesooy@hawaii.edu.

Thank you,
Soo Yeon Lee

APPENDIX E: Reminder Email

Aloha,

My name is Soo Yeon Lee, who asked your participation for the usability study. This is a friendly reminder for your upcoming participation. Please find schedule details below.

- Date: _____
- Time: _____
- Round: _____
- Meeting place: _____

Please bring your laptop or let me know if do not have a laptop. I will bring you a laptop. If you find that you are unable to meet on your scheduled day, please contact me as soon as possible so that I can reschedule your session. Please feel free to contact me if you have any questions at leesooy@hawaii.edu.

Thank you,
Soo Yeon Lee

APPENDIX F: Pre-Questionnaire

Thank you for your consent form and your participation in my study. I would like to request that you complete these short questionnaires consisting of demographics, Internet usage, and exercise experience questions. It takes about 10 to 15 minutes to complete a total of 14 questions. Please note, your information will not be sold or given to outside entities. It is based on your voluntary participation and you can stop it at any time if you don't feel comfortable.

Section 1: Demographics

1. Your age?

- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- Older than 66
- Prefer not to answer

2. Your gender?

- Female
- Male
- Prefer not to answer

Section 2: Internet Usage

3. How often do you use the Internet?

- Daily
- Weekly
- Monthly

4. How long have you used the Internet?

- Less than a year
- More than a year, but less than 5 years
- More than 5 years, but less than 10 years
- More than 10 years

5. What do you usually do on the Internet? (Check all that apply.)

- Email
- Social media
- Entertainment
- Games
- Information searching
- Blog
- Phone calls & texting
- Other _____

Section 3: Exercise Experience

6. I have used an online exercise program (YouTube Videos, exercise app, etc.)

- Yes
- No
- Other _____

7. I have taken exercise classes (in the gym, park, etc.)

- Yes
- No
- Other _____

8. Do you exercise regularly?

- Yes (go to number 9)
- Sometimes (go to number 9)
- Rarely (go to number 9)
- Not at all (Please stop here and finish it. Thank you.)

9. How long do you exercise a day or a week?

- Less than 10 minutes a day, or less than 70 minutes a week
- About 20 minutes a day or 150 minutes a week
- About 30 minutes a day or 210 minutes a week
- More than 40 minutes a day or more than 300 minutes a week
- Other _____

10. What exercise do you do? (Check all that apply.)

- Brisk walks
- Yoga
- Pilates
- Tai-chi
- Jogging
- Zumba
- Jump rope
- Body weight
- Hiking
- Swimming
- Other _____

11. Do you use any safety guidelines in choosing your exercises?

- Yes (please go to number 12)
- No (please stop here and finish it. Mahalo for your participation!)

12. What safety guidelines do you apply when you exercise? (Check all that apply.)

- Consult my doctor or physical therapist about my exercise.
- Inform my workout instructor of my health condition.
- Do warm-up or cool-down stretches before or after exercise.
- Stop exercise whenever I feel pain.
- Focus on the form rather than intensity of exercise
- Wear compression sleeves because I have lymphedema or worry about it
- Other _____

Mahalo for your participation! Please send this via email.

APPENDIX G: Preliminary Questions

Round #: _____

Subject #: _____

Thank you for participating in the preliminary questions. The purpose of the preliminary questions is to collect your first impression on the tested website prior to your task session. Your comments are very valuable for this study. This should not take more than 5 minutes to complete. Your responses are confidential and only used for research purpose only. You can stop answering the questions any time if you do not feel to answer. It is based on your voluntary participation.

I'm going to ask you to look at this page for three or four minutes at most and tell me what you make of it: What strikes you about it, whose site you think it is, what you can do here, and what it's for. Just look around and do a little narrative. You can scroll if you want to, but don't click on anything yet. Please freely take a look around the homepage about three minutes, at most: When you are finished exploring the homepage, please let me know.

Please answer the following questions.

I am going to ask you to look at the homepage and tell me what you make of it.

1. Which one (menu, link, image, videos) seems very interesting to click on?

2. What are your thoughts on the homepage layout such as color, graphics, photos?

3. What are your thoughts on the text in size and font-wise?

Now, I would like to ask about your general impression of the website.

1. What is your first impression when you see this website?

2. What information do you expect to get from this website?

3. Who is it for? What makes you think so?

4. What do you think people can do on this website?

Thanks for doing a great job. Now I'm going to ask you to try doing some specific tasks. I'm going to read each task question loud. Please find task questions on page 4 to 6 in the Usability Protocol. And again, as much as possible, it will help us if you can try to think out loud as you go along.

APPENDIX H: Usability Protocol with Scenarios

F.A.R. Exercise Guide Usability Study

Modified from Usability Script- Rocket Surgery Made Easy © 2010 Steve Krug

Before the session:

Setting Up & Conducting the Study:

1. Send an online meeting address along with a usability study scenario via email to each participant one day prior to the session.
2. Send a reminder email or call to each participant about three hours prior to the session.
3. Plug your computer into a power outlet and attach all cords/peripherals.
4. Set up and test out wi-fi connection, camera, and audio Set up audio and test
 - a. Ensure the microphone is working.
 - b. Ensure the volume is at a reasonable level.
5. Login into Zoom account
6. Test the website walkthrough to check the functionality of the speaker and camera in the computer:
 - a. For best results, ensure that you are running the Chrome browser.
 - b. Ensure that the current Zoom Voice and Video Setup are plugged in.
7. Invite the participant to the online meeting:
 - a. Start a meeting by clicking on ‘host a meeting’ on top right of the account page next to your name.
 - b. At the scheduled time when the participate/facilitator is ready to participate in the study, notify participant to click on an emailed link to join Zoom meeting.
8. The participant will join the Zoom meeting at the scheduled time.
9. To begin recording your session, click on the grey button labeled “Record.”
 - a. Alternatively, a box can be checked when setting up the meeting to automatically record.
 - b. Once Zoom meeting and the session end, the session recordings will be saved in the Zoom folder within My Documents on the facilitator’s default drive.
10. Explain the study to participant. Ensure that participants understand all directions.
11. Ask the participant to share their screen. This can be done by clicking on the “Screenshare” link on their bottom navigation bar in the Zoom window.
12. When the participant has completed their tasks direct the participant to end “Screenshare.”
13. Thank participants for their participation and ask if they have any further questions.
14. When the conversation is complete, click on “End Recording” the study session will be saved and posted to “My Documents > Zoom” folder with date and time.

During the session:

Remind the participant of using their scenario while participating in a session with Zoom. Ensure the facilitator to follow the scenario while conducting a session with Zoom.

Session Scenario

Hi, my name is Soo, and I’m going to be walking you through this session today. Before we

begin, I have some information for you.

You probably already have a good idea of why you are here, but, let me go over it again briefly. I am asking people to try using a website if it works as intended. The purpose of this session is to evaluate the ease-of-use of the navigation and the exercise plan in the FAR Exercise guide for breast cancer survivors to help them meet the 150 minutes a week minimum exercise requirement recommended by the World Health Organization.

The thing that I would like to test is the site, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes. Also, please don't worry that you're going to hurt our feelings. I'm doing this to improve the site, so I need to hear your honest reactions.

As you use the site, I'm going to ask you as much as possible to try to think out loud: To say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to me to find out patterns of users for the website. We are going to start few preliminary questions, 4 tasks, simple interview questions, and then a post-questionnaire. The post-questionnaire link will be provided to you after this session. A whole entire session should take about 45 minutes to an hour.

Your computer activities and voice will be recorded throughout a session and stored in the secured computer. Later, those will be destroyed when your responses are analyzed. Data from your session will not be used for outside entities.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since I am interested in how people do when they don't have someone who can help. But if you still have any questions when we're done I'll try to answer them then. Last, but not least, you have a right to stop it a middle of the session any time for any reason, without penalty. And if you need to take a break at any point, just let me know.

Do you have any questions so far?

Ask participant a few preliminary questions:

OK. Before we look at the site, I'd like to confirm that you have completed a consent form and pre-questionnaire. If you haven't completed it, please complete it now. Please visit the pre-questionnaire and a consent form by following the link, <https://goo.gl/forms/2TInsawY6HM8nJQw1> and <https://goo.gl/forms/918pSaLPej6nw7WU2> respectively.

OK, great. We're done with the questions, and I can see you are fully qualified for this test. Now, we can start testing out the site.

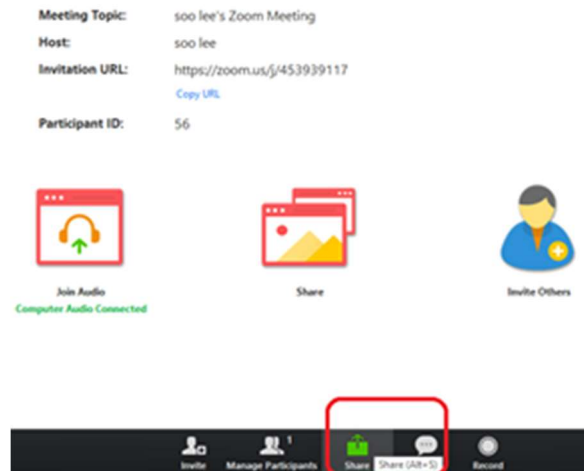
Send the participant a URL for the website to be evaluated:

<https://leesooy.wixsite.com/farexercise>

Ask a participant to begin screenshare:

Please follow the link and start screensharing with me by clicking on the green 'Screenshare'

button which is on the bottom of the Zoom window. The button would be different depending on your computer size or setting. Please see the following picture to understand its location better. Please press ALT + S, if you can't find it.



- Have participants do a narrative of the website's overall appearance three or four minutes, at most:**

I'm going to ask you to look at this page and tell me what you make of it: What strikes you about it, whose site you think it is, what you can do here, and what it's for. Just look around and do a little narrative. You can scroll if you want to, but don't click on anything yet. Please freely take a look around the homepage for about three minutes, at most: When you are done exploring the homepage, please let me know.

I am going to ask you to look at the homepage and tell me what you make of it.

1. Which one (menu, link, image, videos) seems very interesting to click on?
2. What are your thoughts of the homepage layout such as color, graphics, photos?
3. What are your thoughts of the text in size and font-wise?

Now, I would like to ask you a general impression on the website.

1. What is your first impression as you visit this website?
2. What information do you expect to get from this website?
3. Whom is it for? What makes you think so?
4. What do you think people can do on this website?

Thanks for doing a great job. Now I'm going to ask you to try doing some specific tasks. I'm going to read each one out loud. And again, as much as possible, it will help us if you can try to think out loud as you go along.

- Allow the user to proceed from one task to the next until you don't feel like it's producing any value or the user becomes very frustrated. Repeat for each task or until time runs out.**

Task questions:

Task 1. Your doctor recommended you exercise more than 150 minutes a week or 20 minutes a day. You have searched online exercise resources and find this website. You want to learn about what F.A.R is about. Please visit the website and find the main purpose of the F.A.R. Exercise Guide.

Thank you! What do you think about this task in terms of its difficulty? On the scale from 1 to 6, with 1 being very difficult and 6 being very easy, how would you rate this task? Why?

1 2 3 4 5 6
Very difficult Difficult Somehow difficult Somehow easy Easy Very easy

What do think we should do to make this task easier? While completing this task, did you notice any terms or sentences that were confusing? How? Thank you! Do you have any other comments for this task in particular

2. You have been fully motivated to lose 10 lbs.' weight gain after your surgery. But, you are afraid of any chance of getting injured in the area where surgery was done.

- Please find suitable exercises for you
- Please find a way to adopt safety guidelines for your chosen exercises

Thank you! What do you think about this task in terms of its difficulty? On the scale from 1 to 6, with 1 being very difficult and 6 being very easy, how would you rate this task? Why?

1 2 3 4 5 6
Very difficult Difficult Somehow difficult Somehow easy Easy Very easy

What do think we should do to make this task easier? While completing this task, did you notice any terms or sentences that were confusing? How? Thank you! Do you have any other comments for this task in particular

3. You do not have enough time to exercise this week, no time to go to a gym or a fitness class; but, you want to complete 60 minutes of strength training, 60 minutes of aerobic, and 30 minutes of stretching exercises during this week.

- Please find suitable strength exercise(s) that fits your situation.
- Please find suitable aerobic exercise(s) that fits your situation
- Please find suitable stretching exercise(s) that fits your situation

Thank you! What do you think about this task in terms of its difficulty? On the scale from 1 to 6, with 1 being very difficult and 6 being very easy, how would you rate this task? Why?

1 2 3 4 5 6
Very difficult Difficult Somehow difficult Somehow easy Easy Very easy

What do think we should do to make this task easier? While completing this task, did you notice any terms or sentences that were confusing? How? Thank you! Do you have any other comments for this task in particular

4. You want to send your filled weekly plan to your friend every week so that you and your friends can work out together.

- Please find a way to schedule your weekly exercises.
- Please find a way to get a copy of your plan.

Thank you! What do you think about this task in terms of its difficulty? On the scale from 1 to 6, with 1 being very difficult and 6 being very easy, how would you rate this task? Why?

1 2 3 4 5 6
 Very difficult Difficult Somehow difficult Somehow easy Easy Very easy

What do think we should do to make this task easier? While completing this task, did you notice any terms or sentences that were confusing? How? Thank you! Do you have any other comments for this task in particular?

5. You have never heard about “Lymphedema”, a medical term used on the website. Please find a way to search the term on the website.

Thank you! What do you think about this task in terms of its difficulty? On the scale from 1 to 6, with 1 being very difficult and 6 being very easy, how would you rate this task? Why?

1 2 3 4 5 6
 Very difficult Difficult Somehow difficult Somehow easy Easy Very easy

What do think we should do to make this task easier? While completing this task, did you notice any terms or sentences that were confusing? How? Thank you! Do you have any other comments for this task in particular?

That’s the last question. Do you have any questions for me, now that we’re done?
 I want to thank you for your time and willingness to be a participant in this study.

- Ask a participant to stop sharing screen and leave the session.**

After the Session:

1. Ensure that the video and audio are recorded and saved.
2. Quickly scrub through the video to ensure the integrity of the audio and video.

APPENDIX I: Interview Questions

Round # _____

Session # _____

Thank you for participating in this interview. The purpose of this interview is to collect your feedback to implement potential improvements on the tested website. Your comments are very valuable for this study. This interview should not take more than 10 minutes to complete. Your responses are confidential and only used for research purpose only.

1. What did you like best about this site? And why?

2. What did you like least about this site? And why?

3. On a scale of 1 to 5, with 1 representing very difficult and 5 representing very easy, how would you rate your experience during today's testing? And why you rated it?

4. After participating in this study, would you recommend this site to any of your friends or family? Why or why not?

Thank you for your participation! Please follow the link to a post-questionnaire.

Post-questionnaire

<https://goo.gl/forms/dWQR7roQmPjG793q2>

APPENDIX J: List of Problems with Severity Scale

No.	Problem Description	Ref.	Severity Scale	Reason for rating
Task 1: Searching for the intentions of the website				
Task 2: Navigating Safe FAR page				
Task 3: Navigating Choose FAR page				
Task 4: Filling out Weekly plan page				
Task 5: Finding unknown medical terms				

Others				

Nielsen’s (1995) 5-level scale for usability problem severity

- 0=I don’t agree that this is a usability problem at all
- 1=Cosmetic problem only: need not to be fixed unless extra time is available on the project
- 2=Minor usability problem: fixing this should be given low priority
- 3=Major usability problem: important to fix, so should be given high priority
- 4=Usability catastrophe: imperative to fix this before the product can be released

Reference(Ref.) is when/where the problem is identified.

- L: Literature review
- O: Observation
- Q: Questionnaires

APPENDIX K: List of Recommended Change Sheet
Usability Study: FAR Exercise Guide Program

Session No. _____

Round No. _____

Problem #1: _____

Changes:

Problem #2: _____

Changes:

Problem #3: _____

Changes:

Problem #4: _____

Changes:

Problem #5: _____

Changes:

Problem #6: _____

Changes:

APPENDIX L: Post-Questionnaire

Thank you for completing the usability study session. I would like to ask you about your experience with this website. Your feedback is very valuable to gather information on overall satisfaction to implement potential improvement on this website. Please rate each statement based on the scale provided. This survey should not take more than 10 minutes to complete. Your responses are confidential and only used for research purpose only.

Session 1: Design

1. The design of the app is visually attractive

1	2	3	4	5
Not at all	Slightly	Moderately	Very much	Extremely

2. The design of the website is integrated and consistent.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

3. The word font and size are easy to read.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

4. The menu bar on the homepage is logically set up.

1	2	3	4	5
Not at all	Slightly	Moderately	Very much	Extremely

5. The contents in the CHOOE FAR section are relevant and informative.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

6. Transition from the CHOOSE FAR to the PLAN FAR section is easy and smooth.

1	2	3	4	5
Not at all	Slightly	Moderately	Very much	Extremely

Session 2: Navigation

7. The website is easy to navigate.

1	2	3	4	5
Not at all	Slightly	Moderately	Very much	Extremely

8. The number of clicks to any section is less than three times.

1	2	3	4	5
Strongly disagree	Disagree	Fair	Agree	Very agree

9. The title of the section easily matches with the contents of the section.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

10. Navigations from section to section are clear and easy.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

Session 3: Effectiveness

11. Contents in sections are relevant and credible.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

12. Exercises introduced in contents are easy to follow.

1	2	3	4	5
Very difficult	Difficult	Fair	Easy	Very easy

13. Any links I clicked on worked.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

14. I can come back anytime from linked website to this website.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

15. Creating a weekly plan is easy to make.

1	2	3	4	5
Not at all	Slightly	Moderately	Very much	Extremely

Additional Comments

16. Do you have any suggestions to improve any other components of this website?

APPENDIX M: CITI Program Certificates



Completion Date 29-Mar-2017
 Expiration Date 29-Mar-2021
 Record ID 22603825

This is to certify that:

Soo Yeon Lee

Has completed the following CITI Program course:

Social and Behavioral Responsible Conduct of Research (Curriculum Group)
Social and Behavioral Responsible Conduct of Research (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

University of Hawaii



Verify at www.citiprogram.org/verify/?w8504cde1-2fd9-4b4c-9614-6b33ebacaa37-22603825



Completion Date 29-Mar-2017
 Expiration Date 28-Mar-2020
 Record ID 22603831

This is to certify that:

Soo Yeon Lee

Has completed the following CITI Program course:

Human Subjects Research (HSR) (Curriculum Group)
Supplemental: Working with Elementary & Secondary Schools (Course Learner Group)
1 - Module (Stage)

Under requirements set by:

University of Hawaii



Verify at www.citiprogram.org/verify/?wd7ac6eca-ea20-4971-9425-ec63d979ac01-22603831



Completion Date 27-Mar-2017
Expiration Date 26-Mar-2020
Record ID 22603828

This is to certify that:

Soo Yeon Lee

Has completed the following CITI Program course:

Human Subjects Research (HSR) (Curriculum Group)
Non-Exempt Social & Behavioral Sciences Researchers and Key Personnel (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

University of Hawaii



Verify at www.citiprogram.org/verify/?wac7adfb3-47f7-4224-b52c-a112f648702d-22603828



Completion Date 17-Mar-2017
Expiration Date 16-Mar-2020
Record ID 22603829

This is to certify that:

Soo Yeon Lee

Has completed the following CITI Program course:

Human Subjects Research (HSR) (Curriculum Group)
Exempt Researchers and Key Personnel (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

University of Hawaii



Verify at www.citiprogram.org/verify/?w1837e82c-434e-4a44-81bb-a4562190cdd2-22603829



Completion Date 30-Mar-2017
Expiration Date 29-Mar-2020
Record ID 22603830

This is to certify that:

Soo Yeon Lee

Has completed the following CITI Program course:

Human Subjects Research (HSR) (Curriculum Group)
Supplemental: Children as Vulnerable Population (Social & Behavioral Focus) (Course Learner Group)
1 - Module (Stage)

Under requirements set by:

University of Hawaii



Verify at www.citiprogram.org/verify/?w59bd9a37-f8f7-4b5e-9a14-cfc5fc352e60-22603830



Completion Date 27-Mar-2017
Expiration Date 26-Mar-2020
Record ID 22603827

This is to certify that:

Soo Yeon Lee

Has completed the following CITI Program course:

Information Privacy Security (IPS) (Curriculum Group)
Exempt Researchers and Key Personnel IPS (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

University of Hawaii



Verify at www.citiprogram.org/verify/?w4235262d-5957-46d1-8a59-fbd2aea298a9-22603827



Completion Date 27-Mar-2017
Expiration Date 26-Mar-2020
Record ID 22603826

This is to certify that:

Soo Yeon Lee

Has completed the following CITI Program course:

Information Privacy Security (IPS)

(Curriculum Group)

Non-Exempt Social & Behavioral Sciences Researchers and Key Personnel IPS

(Course Learner Group)

1 - Basic Course

(Stage)

Under requirements set by:

University of Hawaii



Verify at www.citiprogram.org/verify/?wcf5eb98d-df4b-4928-bdce-c44c7475cf79-22603826