Website physical activity interventions: preferences of potential users

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Abstract

Information and communication technologies (particularly websites and e-mail) have the potential to deliver health behavior change programs to large numbers of adults at low cost. Controlled trials using these new media to promote physical activity have produced mixed results. User-centered development methods can assist in understanding the preferences of potential participants for website functions and content, and may lead to more effective programs. Eight focus group discussions were conducted with 40 adults after they had accessed a previously trialed physical activity website. The discussions were audio taped, transcribed and interpreted using a themed analysis method. Four key themes emerged: structure, interactivity, environmental context and content. Preferences were expressed for websites that include simple interactive features, together with information on local community activity opportunities. Particular suggestions included online community notice boards, personalized progress charts, e-mail access to expert advice and access to information on specific local physical activity facilities and services. Website physical activity interventions could usefully include personally relevant interactive and environmentally focused features and services identified through a user-centered development process.

Introduction

The Internet has considerable, but largely untested, potential as a medium for delivering health behavior change programs. It has many advantages over print, broadcast and face-to-face media. These include novelty and appeal, flexibility and convenience of use, instantaneous interactivity, the provision of information that is individually tailored and the facilitation of interpersonal interaction and social support [1]. People have reported a higher preference for physical activity advice to be delivered via e-mail or the Internet than via telephone or print media [2].

Population prevalence data suggest that physical activity levels may be declining among middle-aged adults and those with a tertiary education [3]. Therefore, physical activity interventions capable of reaching large numbers of mid-aged adults at low cost are needed. New information and communication technologies (particularly websites and e-mail) may have this capability.

A small number of trials of website-delivered physical activity programs have been reported [4–7]. Some promising findings have emerged from studies using volunteer samples [4]. Others have reported that program use was associated with behavior change [6, 7] and no significant behavior change outcomes were reported in the only trial reported thus far that included non-volunteer participants [5]. Addressing the issue of poor participant adherence and engagement with the program has been identified as priority for future research [8].

Website development guidelines recognize the importance of focusing on the intended audience throughout the design process [9, 10]. These guidelines are consistent with what has come to be
known as a ‘user-centered approach’ to website design [11]. User-centered design focuses on the target audience throughout the design process and aims to create a website that is both easy to use and appealing. No published studies were located that described a user-centered design approach for developing a physical activity website program. The aim of this study was to explore the potential of a user-centered approach to website development. Focus group discussions were conducted with potential end users to identify their preferences for features and content in a physical activity website program.

**Methods**

Qualitative data were collected from 40 adult participants in small discussion groups. Groups ranged in size from 3 to 8 participants and lasted between 1 and 1.5 hours. All groups were heterogeneous and included both men and women of varying ages and physical activity levels. Each group was led by the same facilitator, who had a degree in human movement studies. Participants gave informed consent. The University of Queensland Human Research Ethics Committee approved the study.

Participants were recruited through a community-based Internet service provider, advertisements in local newspapers and existing social groups. Eligibility criteria included being aged 18–65 years and having home access to the Internet. Recruitment to groups continued until saturation was reached—that is, until no new information was being presented in each new group [12].

**Procedures**

Potential participants were screened by telephone. Those who were eligible and interested were given an overview of the study. To introduce participants to the topic, they were also asked to log on to and view a previously evaluated physical activity website [5] and to consider its functionality, appearance, content and usefulness, before attending the discussion group.

Before commencing each discussion, participants completed a self-administered questionnaire including standard demographic and validated 1-week physical activity recall questions regarding frequency and time spent walking or doing moderate- and vigorous-intensity physical activity in the past week [3, 13].

To elicit information, the facilitator used a semi-structured interview guide, consisting of a series of non-leading, open-ended questions. The questions related to participant attitudes and preferences toward the current physical activity website (for example, ‘what did you like about the website?’), websites in general (‘what features have you liked about websites you visit?’) and physical activity websites specifically (‘what tools would you like to see in a physical activity website?’). Participants were encouraged to respond to each question and the facilitator built on each person’s responses to elicit further discussion. Participants were offered refreshments during the discussions and complimentary movie passes for their involvement.

Participant’s demographic and physical activity data were analyzed using descriptive statistics in SPSS version 12. An estimate of participants’ total reported physical activity was calculated according to methods described by Armstrong et al. [13], whereby participants self-reported frequency (sessions/week) and time (min/week) spent walking or doing moderate- and/or vigorous-intensity physical activity were summed. These data were then used to identify participants who were sufficiently active for health benefits according to current physical activity recommendations, interpreted as doing at least 150 min of physical activity a week, on at least five occasions in the past week [3, 13].

The discussion group audiotape recordings were transcribed verbatim. The data were analyzed using techniques described by Stewart and Shamdasani [14]. The transcripts were read independently by two researchers and sections relevant to the research question were identified. Each researcher developed a classification system for major themes and material in the transcripts that related to each theme was identified. The authors then discussed their findings, and agreed upon a final coding
system for themes. Themes were defined as issues or ideas that were repeated and common to several participants in >1 group. As coding continued, the researchers challenged each theme by searching for any contradictory patterns. The themes that emerged are presented with representative quotes in italics.

**Results**

Eight focus groups were conducted with a total of 40 participants. Table I describes participants’ characteristics.

Four major themes emerged, relating to ‘design’, ‘interactivity’, ‘environmental context’ and ‘content’. Recommendations for features and services recommended by participants under each of these themes are summarized in Table II and are outlined in more detail below.

**Theme 1: design**

The overall usability of a website was considered extremely important (‘ease of use, for me it has to be ease of use’). Several participants emphasized the importance of a website’s home page and discussed that information should be easily accessible (‘I like to see sites that are simply laid out; I don’t want to have to go looking for stuff’; ‘You want to know where you find what you want, I want to go straight down the page and get where I want to go within the site’). Another primary consideration was the speed and download time of a website (‘It is the time they take to download, it drives me crazy, I would rather not use them’; ‘Fast websites as well, because I don’t like waiting for ages for anything’).

**Theme 2: interactivity**

Participant suggestions on how to maximize user engagement focused on the need for more interactive features, such as online peer-directed forums. Participants felt that a forum could offer a social support network along with other helpful advice and suggestions. For example, ‘I am looking for

<table>
<thead>
<tr>
<th>Theme</th>
<th>Recommendation</th>
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<tbody>
<tr>
<td><strong>Design</strong></td>
<td>Minimize download time</td>
</tr>
<tr>
<td></td>
<td>Adopt website design conventions</td>
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<tr>
<td></td>
<td>Conduct extensive usability testing</td>
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<tr>
<td><strong>Interactivity</strong></td>
<td>Include an online peer-directed forum</td>
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<td></td>
<td>Include a self-report progress chart allowing users to set goals and monitor their physical activity progress</td>
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<td></td>
<td>Provide the opportunity for users to e-mail an exercise scientist for personally relevant advice</td>
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<tr>
<td><strong>Environmental context</strong></td>
<td>Include an updated community focused calendar of events</td>
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<td></td>
<td>Include maps outlining physical activity opportunities in the community</td>
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<tr>
<td></td>
<td>Provide a physical activity database outlining all opportunities for physical activity with information on opening times, costs, contact details and facilities</td>
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<tr>
<td><strong>Content</strong></td>
<td>Incorporate audio or video component where appropriate</td>
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<tr>
<td></td>
<td>Continually update the website</td>
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<td></td>
<td>Include interesting information that is related to the aims of the website such as healthy recipes</td>
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<tr>
<td></td>
<td>Send regular newsletters via e-mail</td>
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</tbody>
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Table I. Characteristics of study participants

<table>
<thead>
<tr>
<th>Demographic variable</th>
<th>Number of participants (total n = 40)</th>
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<tbody>
<tr>
<td>Gender</td>
<td>Female 29</td>
</tr>
<tr>
<td>Age</td>
<td>18–44 years 16</td>
</tr>
<tr>
<td></td>
<td>45–65 years 24</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married/have partner 31</td>
</tr>
<tr>
<td>Education</td>
<td>College graduate 23</td>
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<tr>
<td>Occupation</td>
<td>Manager/professional 26</td>
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<tr>
<td></td>
<td>Tradesperson/laborer 2</td>
</tr>
<tr>
<td></td>
<td>Sales/clerical 7</td>
</tr>
<tr>
<td></td>
<td>Home duties 5</td>
</tr>
<tr>
<td>Employment status</td>
<td>Full time 30</td>
</tr>
<tr>
<td>Physical activitya</td>
<td>Sufficient 24</td>
</tr>
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</table>

*a Doing ≥ 150 min of physical activity a week, on at least five occasions in the past week.*
a partner to walk on Tuesday to Thursday'; ‘You could have something where people could submit their names and say, hey look I would like to join a club'; and ‘... a hints page where you could send in hints’.

The opportunity to e-mail an ‘expert’ for individualized advice about physical activity was appealing. ‘Yeah because sometimes you don’t know where to start’; ‘You are kind of looking for an expert; you are looking for somebody to tell, because you don’t know what you are doing’; ‘I think that in terms of communication, personalizing everything’.

The ability to record, track and monitor individual progress was suggested as a tool to help people maintain interest in a physical activity program. ‘Some sort of diary, so that they could come in each day and make a note of how they are progressing’; ‘If you give them something to keep motivated, maybe some diaries or forms that they can gauge how far they have gone’.

Theme 3: environmental context

Many participants felt that they were unaware of the opportunities that existed for physical activity in their local area. ‘I mean go for a walk, but where?’; ‘We need to know what is available in our town’. Information on community specific opportunities for physical activity was frequently requested. ‘It would be nice to know what other resources were in the community to motivate you to do more things; walking paths, gyms; those sorts of things’.

Most groups felt that a physical activity database should be included. ‘If you put in your postcode and something came up with a list of facilities in your area’; ‘an area that gives you things that can be done, like walks or Tai Chi, so that people can look up what is happening in their local area’. The database should include specific information on opening times, associated costs and contact details of the facility or group. ‘Yeah, have a list of facilities, like there are toilets there, taps and things like that’. A calendar of events and maps were common suggestions. ‘What’s On in your local community; having that updated every week or so would motivate me to actually go back’; ‘I think having a map of everything available; include the walking sites or walking facilities’.

Participants felt that information on unusual and uncommon activities should be included. ‘I would be more interested in things that you don’t stumble across like kayaking and rock climbing’.

Theme 4: content

All groups reported that the website they reviewed was too long and repetitious. ‘There was an awful lot of reading’; ‘there wasn’t a lot of newness in each screen’. Participants felt that websites needed to be continually updated to maintain user interest. ‘If something changed or having something new, giving you a bit more of an incentive to go back’; ‘just a new thing each week to make you keep going back to look at what is new’. Participants suggested including ‘interesting but related things’ such as ‘motivational quotes’, ‘weekly recipes’, ‘jokes about exercise’ or ‘different seasonal things’ to encourage ongoing use of the program.

The participants reported that ‘the real rich part of the website’ they reviewed was the interactive tools section that helped them set goals, plan activity and calculate target heart rate. These tools were considered practical, useful and complementary to the other information provided. ‘Well that was practical and I could do that to actually get moving’. Providing links to related websites was another good feature. ‘I like websites that link to other websites’.

E-mail reminders or newsletters that provided information on new program features or upcoming events in the local community were strongly recommended. ‘I would like to receive a weekly newsletter’; ‘you could receive a weekly newsletter that has links that you could click on if you wanted to’.

Participants felt that including some audio and other multimedia features would make a physical activity website more personable and realistic. ‘Make it more real, have their voice rather than just their picture’; ‘I would like to see a group of middle-aged women walking down the street with hats and a water bottle, because that makes it real for me’.
Discussion and conclusion

Despite the case for the potential of website-delivered health behavior change programs, not all programs focused on promoting physical activity have demonstrated positive effects [4–7]. Optimizing and maintaining user engagement remains a considerable challenge [8]. This study aimed to identify potential end users’ preferences for features and content that could enhance the usability and appeal of future website-delivered physical activity interventions. Participant preferences for website features and content were able to be broadly classified into four areas; ‘design’, ‘interactivity’, ‘content’ and ‘environmental focus’.

Participants provided informative perspectives regarding their preferences for website design and organization. As expected, ease of use was considered essential to the design of an appealing website. To ensure that a website is ‘usable’, established design conventions should be adhered to. For example, navigational controls and search functions should be standardized across the site.

Many participants highlighted the importance of designing a home page that provided access to all other components of the website. This is consistent with previous research exploring the usability of a nutrition-based website that indicated that participants preferred a broad, shallow website rather than one with a deep hierarchy of functions [15].

Participants were particularly concerned about download time, stating that they would prefer a quick website to one with complex graphics which took longer to download. Current design conventions recommend that individual web pages should download within 10 s [16]. To ensure download time is not compromised, graphics should be simple and multimedia effects should only be used when they can add value to users’ understanding of the information.

Along with functional criteria, website content is particularly important when trying to change people’s behavior. Cummins et al. [17] developed criteria specifically targeted toward behavior change websites. An important component of these criteria is the need for website-delivered programs to ‘assist’ participants to change their behavior. With regard to physical activity programs, the results of this study suggest that a bulletin board, the opportunity to self-monitor, online advice from an expert, links to related sources and receiving e-mailed reminders or newsletters may assist participants to monitor and change their physical activity behavior.

Participants felt that, through the provision of a bulletin board and access to personalized expert advice, websites could provide a unique opportunity for individual counseling and support from other users of the program. Social support is an important determinant of physical activity [18] and, if facilitated online, may enhance user engagement and satisfaction with program materials. Glasgow et al. [19] reported that participants randomized to a peer support website, which included bulletin boards and live chat sessions, accessed the website more frequently than participants randomized to a behavioral counseling website.

Recent studies related to personal relationships, social networks and the role of website technology indicate a shift from people identifying with tightly knit groups based on physical proximity at home or in the workplace, to much broader social networks that are defined by activities, special interests and other diverse links [20]. These networks may be facilitated by online communication technologies.

Website-delivered physical activity programs have focused primarily on the intra-individual motivational factors related to behavior change [4, 5]. Our participants’ feedback suggests that it might be useful for future programs to combine the ‘environmental’ focus of ecological models by providing information on opportunities for physical activity in a person’s local community.

Research into the environmental influences on physical activity has shown that people’s perceptions of their environment are related to their physical activity behavior [21, 22]. Further, it has been found that these perceptions are amenable to change such that when an individual’s perception of their environment positively changes so does their physical activity behavior [23]. Thus, specifically developing an intervention program that focuses on...
and promotes the opportunities for physical activity within an individual’s local environment may positively influence their perception of their environment and subsequently their physical activity. This is consistent with previous research which has found that both print-delivered and mass-media physical activity interventions are more effective when delivered within defined communities [24, 25]. Furthermore, access to like-minded others through an online communication network may help to facilitate the social support necessary to assist with behavioral change.

Although the findings from this study provide practical suggestions to guide the development of physical activity websites, it is important to consider the feasibility, sustainability, cost-effectiveness and efficacy of the features suggested. In addition, the potential disadvantages of the features should be contemplated. For example, the bulletin boards may provide an opportunity to facilitate social support, but there is also the possibility that users could post incorrect and potentially harmful information. Consequently, bulletin boards would need to be constantly monitored by appropriate personnel. Furthermore, the need to continually update a website and provide participants with e-mail access to professional advice will require constant monitoring of the program. While this will increase the cost associated with a web-based program, it would still be more cost effective than providing individualized face-to-face counseling on mass.

Attitudes toward a physical activity website may differ depending on a person’s current physical activity level or his/her stage of motivational readiness for change. As the groups in this study were not selected according to either of these factors, this could not be explored in the current study. Nonetheless, the themes that emerged from this qualitative study suggest that future website-delivered programs could include more personally relevant, interactive and environmentally focused features and services. These findings raise some challenges and suggest possibilities for investigating how websites can be most effectively designed around specific health behaviors, like physical activity, where there is a focus on specific locations for activity within a local community, and where support and social contact can primarily be made available online. Further research is required to systematically evaluate the feasibility (given time and cost constraints), sustainability, cost-effectiveness and the efficacy of features offered via website-delivered physical activity programs.

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References


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