A RE-AIM Evaluation of a Team-Based Physical Activity Program for University Employees

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Abstract

Desire2Move (D2M) was an 8-week team-based program designed to encourage physical activity among university employees. The purpose of this study was to conduct a RE-AIM evaluation of the program. Eligible participants were university employees and tracked daily physical activity minutes using a mobile app or a pedometer and total team minutes were calculated. Ten weeks after D2M, an online survey was sent to collect additional effectiveness and implementation information. 58 employees participated in the D2M challenge while 34 employees participated in the survey. Although not significantly different, the D2M participants reported greater physical activity participation than non-D2M participants. The RE-AIM evaluation of the first D2M challenge showed positive results for effectiveness, adoption, implementation, and organizational maintenance, and modest results for reach. Program planners should target PA attitude and motivation of low-active employees to encourage participation in future implementations of D2M.

Keywords: exercise; health behavior; health promotion, physical activity

Introduction

The most common cause of death by 2030 will be chronic disease [1] Risk factors for chronic disease are lifestyle related and physical inactivity is the fourth leading risk factor for mortality [2]. Nearly 3.2 million people die each year from physical inactivity [3] and, as of 2008, 31% of adults 15 years and older were insufficiently active [2]. However, regular physical activity (PA) reduces the risk for chronic diseases and premature death [2, 4]. With most adults spending the majority of their awake hours at sedentary jobs [5], implementing PA interventions in the workplace could help increase PA and reduce the predisposition for chronic diseases.

The RE-AIM framework [6] was designed to assist investigators with planning and evaluating interventions in translation efforts. The five factors of the framework include: (a) Reach (e.g. the number, proportion, and representativeness of the intervention sample), (b) Effectiveness (e.g., the impact of the intervention on important behavioral, psychological, and physiological outcomes), (c) Adoption (e.g., the number, proportion, and representativeness of the intervention settings), (d) Implementation (e.g., consistency of delivery of the intervention), and (e) Maintenance (e.g., the continuation [setting] and long-term effects [individual] of the intervention). Therefore, the purpose of this study was to examine the public health impact of the first implementation of Desire2Move (D2M) using the RE-AIM framework. D2M was an 8-week team-based program designed to encourage PA among university employees.
Materials and Methods

Participants
Eligible participants were employees from the Departments of Kinesiology and Health (KH), Human Resources (HR), and Recreational Services (SRC) from a southeastern university (N = 121).

Measures

Reach. Reach was evaluated by examining the number and proportion of the target population that participated in D2M. We developed a questionnaire to gather demographic information including age, height, weight, gender, race, education level, employee status, and department affiliation for the online survey.

Effectiveness. Effectiveness was assessed on the following variables: (a) PA motivational constructs, (b) PA participation, (c) program satisfaction (D2M participants), (d) adverse events (D2M participants), and (e) barriers to participation (non-D2M participants).

Physical activity motivational constructs. We measured PA motivational factors with 19 questions using 7-point Likert-type scales developed according to the recommendations by Ajzen [7]. To measure attitude (ATT), seven adjective pairs (e.g., 1 = boring and 7 = interesting, 1 = harmful and 7 = beneficial, 1 = unpleasant and 7 = pleasant) were used to rate the following statement: “For me, participating in regular physical activity is”. Subjective norm (SN) were measured using four statements such as, “Most people who are important to me are interested in participating in regular physical activity” (strongly disagree = 1 and strongly agree = 7) and, “Most people who are important to me want me to participate in regular physical activity” (1 = strongly disagree and 7 = strongly agree). Perceived behavioral control (PBC) was assessed with four questions, such as, “If you are really motivated, how confident you that you can participate in regular physical activity?” (1 = not confident at all and 7 = completely confident) and “If you are really motivated, participating in regular physical activity is” (1 = easy and 7 = difficult). Intention (INT) was measured by three statements including “I intend to participate in regular physical activity (1 = strongly disagree and 7 strongly agree). When applicable, answers were reverse-coded so that higher scores for each construct represented more positive ATT, stronger SN, stronger PBC, and greater INT. Scores were averaged for each construct to obtain a final score.

Physical activity participation. The Godin Leisure-Time Exercise Questionnaire (GLTEQ) [8] asked participants to consider their PA habits during a typical week. Participants reported the number of times they engaged in at least a 15 minute bout of strenuous, moderate, and mild exercise. Total weekly leisure time activity was determined by multiplying the number of bouts of strenuous activity x 9 (i.e., estimated MET value), number of bouts of moderate activity x 5, and number of bouts of mild activity x 3 and summing a total score. The GLTEQ has good test retest reliability over the course of one month between tests (r = .64) and validity has been supported in GTEQ associations with maximum oxygen intake (VO2 max), body fat, and muscular endurance [8-9].

Participant satisfaction. D2M participants responded to three questions that assessed participant satisfaction on a 5-point scale (1 = strongly disagree and 5 = strongly agree). These questions included: (a) “D2M encouraged me to be more physically active than usual”, (b) “I would participate in D2M in the future”, and (c) “I would recommend D2M to my co-workers”.

Adverse events. D2M participants responded to two questions to assess the occurrence of any adverse events during the 8-week D2M PA program. The first question was: “Did you experience any adverse events during D2M that negatively impacted your participation?” (yes or no). The second question was an open-ended question for participants who responded yes to explain in more detail.

Barriers to D2M participation. Non-D2M participants responded to four questions about the barriers to D2M participation. The questions were: (a) “Were you aware that your department participated in the D2M program during Spring 2014? (yes or no)”, (b) “What prevented you from participating in D2M? Please check as many that apply (e.g., did not know about the program, lack of interest in the program, lack of motivation for physical activity)”, (c) “Would you be interested in participating in D2M in the future? (yes or no)”, and (d) “What would make it more likely for you to participate in D2M in the future? (open-ended)”. Given the survey was given at the end of the program, participants were invited to provide feedback on the program components that were least and most beneficial to them.

Adoption. We evaluated adoption by examining the number and proportion of the intervention settings invited to participate in the inaugural D2M intervention. Intervention settings were defined as GSU departments.

Implementation. D2M participants responded to six questions that assessed the receipt of program information from their team captains. The following questions were rated on 5-point Likert scales (1 = strongly disagree and 5 = strongly agree): (a) “My D2M team captain emailed me information about program registration”, (b) “My D2M team captain emailed...”
me information about how to record my physical activity minutes”, (c) “My D2M team captain emailed me weekly reminders about recording my physical activity minutes”, (d) “My D2M team captain emailed me weekly updates about my team’s standing in the competition”, (e) “My D2M team captain emailed me information about bonus point activities”, and (f) “My D2M team captain emailed me information about the awards ceremony”.

Protocol
D2M was a flexible, 8-week team based program designed to meet the needs of university employees regardless of their current level of PA. The inaugural D2M physical activity challenge took place March through April of 2014 and included three departmental teams. Each department designated a team captain who was responsible for communicating program information to participants. During the program, each D2M participant tracked their completed daily PA minutes using one of the three following options: (a) MapMyRun (mobile app or website), (b) MyFitnessPal (mobile app or website), and (c) pedometer (steps were converted to minutes; e.g., 1000 steps = 10 mins). Three graduate assistants were assigned to each team (1 per team) to monitor and collect the PA minutes of the D2M participants. At the end of the 8-week program the team with the greatest overall average of PA minutes was the winner of the D2M challenge. Ten weeks following the D2M challenge, an email with a link to an IRB approved consent form and an anonymous online survey (using Qualtrics) was sent to employees of participating departments. Consenting employees were asked if they participated in D2M. Participants of the D2M program were directed to a different survey than employees who did not participate in the D2M program. The D2M participants completed the following questionnaires: (a) demographics, (b) PA motivation, (c) GLTEQ, (d) participant satisfaction, (e) adverse events, and (f) program implementation. The non-D2M participants completed the following questionnaires: (a) demographics, (b) PA motivation, (c) GLTEQ, and (d) barriers to participation. A follow-up email request was sent to employees once a week for three weeks after the initial request to encourage participation.

Statistical Analysis
Analyses Frequencies, means, and standard deviations summarized the number and proportion of participating individuals (Reach) and departments (Adoption) from the target populations, as well as participant satisfaction, adverse events, and barriers to participation (Effectiveness) and program implementation (Implementation). A multivariate analysis of variance (MANOVA) examined differences between D2M participants and non-D2M participants on PA motivation and behavior (Effectiveness).

Results
Reach
D2M participants were 58 employees (47.9%) from three university departments (n = 23 KH; n = 19 HR; n = 16 SRC). Thirty-four employees (n = 27 D2M participants, n = 7 non-D2M participants) completed the online survey (28.1% response rate). The survey participants had a mean age of 38.3 years (SD = 12.3), were mostly female (73.5%), Caucasian (50.0%), and had earned a graduate or professional degree (82.4).

Effectiveness
During the 8-week program, participants recorded 89,227 total minutes of PA (M = 1538 mins, SD = 1606.8) and a weekly participant average of 192 minutes. The KH department reported the greatest average program minutes (M = 1988.5 mins, SD = 1254.3), followed by HR (M = 1491.80 mins, SD = 1992.5), and the SRC (M = 946.7 mins, SD = 1243.4); however, the teams were not significantly different on average program minutes, F (1, 57) = 2.07, P = .14, ηp 2 = .07, observed power = .41. Before further analyses, two outliers (GLTEQ scores) were removed from the sample. There were significant group differences between the D2M and non-D2M participants on physical motivational constructs, Wilks’ Lambda = .66, F (5, 26) = 2.68, P = .04, ηp 2 = .34, observed power = .72. Specifically, the D2M participants reported significantly stronger attitude (M = 6.57 vs. M = 5.71) and intention (M = 6.53 vs. M = 5.33) than the non-D2M participants (see Table 1). Although not significantly different, the D2M participants reported greater PA participation than the non-D2M participants (M = 48.00 vs. M = 28.33). D2M participants expressed satisfaction with the program by indicating D2M encouraged them to be more active than usual (M = 3.7, SD = 1.4), they would participate in D2M in the future (M = 4.2, SD = 1.2), and they would recommend it to their co-workers (M = 4.3, SD = 1.1). None of the D2M participants reported any adverse events during the 8-week program. Finally, the non-D2M participants reported any adverse events during the 8-week program. Only three departments were invited to participate and all completed the D2M challenge (adoption = 100%). Overall, D2M participants perceived the program was well implemented. They reported that team captains emailed information about program registration (M = 4.6, SD = 0.9), how to record PA minutes. The KH department reported the greatest average program minutes (M = 1988.5 mins, SD = 1254.3), followed by HR (M = 1491.80 mins, SD = 1992.5), and the SRC (M = 946.7 mins, SD = 1243.4); however, the teams were not significantly different on average program minutes, F (1, 57) = 2.07, P = .14, ηp 2 = .07, observed power = .41. Before further analyses, two outliers (GLTEQ scores) were removed from the sample. There were significant group differences between the D2M and non-D2M participants on physical motivational constructs, Wilks’ Lambda = .66, F (5, 26) = 2.68, P = .04, ηp 2 = .34, observed power = .72. Specifically, the D2M participants reported significantly stronger attitude (M = 6.57 vs. M = 5.71) and intention (M = 6.53 vs. M = 5.33) than the non-D2M participants (see Table 1). Although not significantly different, the D2M participants reported greater PA participation than the non-D2M participants (M = 48.00 vs. M = 28.33). D2M participants expressed satisfaction with the program by indicating D2M encouraged them to be more active than usual (M = 3.7, SD = 1.4), they would participate in D2M in the future (M = 4.2, SD = 1.2), and they would recommend it to their co-workers (M = 4.3, SD = 1.1). None of the D2M participants reported any adverse events during the 8-week program. Finally, the non-D2M participants reported any adverse events during the 8-week program. Only three departments were invited to participate and all completed the D2M challenge (adoption = 100%). Overall, D2M participants perceived the program was well implemented. They reported that team captains emailed information about program registration (M = 4.6, SD = 0.9), how to record PA minutes.
minutes (M = 4.4, SD = 1.2), weekly PA minutes reminders (M = 4.1, SD = 1.4), weekly team standings (M = 4.0, SD = 1.3), information about bonus activities (M = 4.2, SD = 1.), and information about the awards ceremony (M = 4.2, SD = 1.4). Finally, administrators expressed interest in the maintenance of D2M (the 2nd annual D2M challenge recently finished in April, 2015 and the 3rd annual challenge will take place February, 2016).

Discussion and Conclusion

D2M was an 8-week team based program designed to encourage PA among university employees. The purpose of this study was to examine the public health impact of the first implementation of D2M using the RE-AIM framework. The RE-AIM evaluation showed positive results for effectiveness, adoption, implementation, and organizational maintenance, and modest results for reach. Reach (47.9%) compares favorably to previous PA promotion studies, with past research reporting participation rates from 47% to 63% [10-13]. Techniques such as preprogram awareness, greater social media outreach, and university advertisements to participating departments could improve reach of D2M. Several findings illustrate the effectiveness of D2M. First, during D2M participants recorded a weekly average of 192 minutes of physical activity and this is above the federal recommendations of 150 minutes a week [14]. In addition, participants enjoyed the program and experienced no adverse effects. D2M participants also reported stronger attitude and intention towards PA 10 weeks after the program compared to non-D2M participants, and greater PA participation although not statistically significant. The increase in PA as a result of intervention is consistent with previous research [13] as is greater attitude and intention leading to greater PA participation [15-16]. Efficacy of D2M was supported by no reported adverse effects from the program [10]. These findings provide a strong rationale for the translation of D2M to similar work environments. However, more rigorous methods, such as objective pre-post measures of PA and other health measures, are needed in the future assessment of efficacy. All contacted departments (100%) adopted the present study. D2M was perceived as well implemented by participants with email correspondence throughout the program. Workplace engagement is crucial for further adoption and continued program success [15]. However, more in-depth implementation analysis would be helpful for future programming [12]. Attempting to collect data to assess for maintenance of individual PA would be helpful as there was interest expressed for maintenance of the program at the organizational level. Although this study provides helpful information for the translation of a worksite PA program, there are certain limitations. First, we were unable to obtain demographics of D2M participants and all departmental employees to determine the representativeness of the sample compared to the eligible population, which is important information to evaluate reach. Second, we administered the survey months after the end of the D2M program that likely explains the low response rate. Finally, the correlational design of the survey does not allow us to attribute the observed differences between the D2M and non-D2M participants on PA participation and motivational constructs to the D2M program. The first D2M program was successful based on the RE-AIM analysis. The RE-AIM analysis enabled further dissemination of PA promotion and research into real-world practical scenarios. Program planners should target PA attitude and motivation of low-active employees to encourage participation in future implementations of D2M and identify additional strategies to improve reach. Further use of the RE-AIM framework is necessary to help adapt the 3rd annual D2M program to meet the individual needs of employees and translate it to similar work environments.

Conflict of interest

The authors declare no conflict of interest.

References

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