

## Understanding the Impact of Move Your Way Campaign Exposure on Key Physical Activity Outcomes – Results from a Multi-site Pilot Evaluation

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### Abstract

The Move Your Way® campaign was developed to encourage physical activity contemplators to get active. A pilot test of campaign implementation was conducted and evaluated in eight communities between March and October 2020. A web-based, cross-sectional survey of adults collected pilot campaign outcome data after campaign implementation. Differences in outcomes between exposed and unexposed groups across the communities were compared. A total of n = 5,140 responded to the survey. Across eight communities, those who reported campaign exposure had 7.2 (95% CI, 6.1-8.6) greater odds of being aware of the *Physical Activity Guidelines for Americans* (Guidelines) compared to unexposed respondents. Additionally, they had greater odds of identifying the correct aerobic and muscle-strengthening dosages and had 1.4 (95% CI, 1.1-1.6) greater odds of reporting meeting both the aerobic and muscle-strengthening Guidelines. In this pilot evaluation, reported exposure to Move Your Way is associated with higher odds of being aware of the Guidelines, knowing recommended dosages, likelihood of becoming more active in the future, higher physical activity self-efficacy, making a recent physical activity behavior change, and higher physical activity levels. The Move Your Way campaign can be used in communities to promote physical activity.

**Keywords:** physical activity, community-based research, guidelines and recommendations, health behavior, evaluation, health promotion

The benefits of engaging in regular physical activity are well-established and continue to grow with expanding evidence on outcomes (e.g., brain health, specific cancer risk) and in various populations (e.g., older adults, women who are pregnant) (U.S. Department of Health and Human Services [HHS], 2018). The *Physical Activity Guidelines for Americans* (Guidelines) and the recommendations of large organizations, other countries, and the World Health Organization are remarkably consistent in the amounts and types of physical activity recommended for overall health (HHS, 2018; World Health Organization, 2020; Canadian Society for Exercise Physiology, 2020; American College of Sports Medicine, n.d.; American Heart Association, n.d.). For substantial health benefits, adults should do at least 150 minutes of moderate-intensity aerobic activity and two days of muscle-strengthening activity each week (HHS, 2018). Currently, less than 25% of American adults meet these recommendations (HHS Office of Disease Prevention and Health Promotion [ODPHP], 2019-a).

Although all Americans would benefit from meeting the Guidelines, the greatest health improvement occurs for individuals moving from no or very low levels of physical activity to more moderate levels of physical activity each week (2018 Physical Activity Guidelines Advisory Committee, 2018). To achieve maximum health benefits at a population level, and with the goal of encouraging more Americans to get active, the Office of Disease Prevention and Health Promotion (ODPHP) within the U.S. Department of Health and Human Services (HHS) developed the Move Your Way® campaign. Move Your Way is a multichannel health communication campaign focused on reaching physical activity contemplators, or individuals who are not meeting the recommendations in the Guidelines but who are interested in getting more active within the next six months (Bevington, et al., 2020). The campaign is the latest federally supported, physical activity-focused, health communication campaign and is the first directly tied to the Guidelines (Bevington et al., 2020; Wong et al., 2008; Herman, 2014).

Prior research in physical activity interventions, guided by the transtheoretical model of behavior change, suggests that individuals in the various stages of change have distinct levels of readiness to change, and therefore differing physical activity attitudes, behaviors, self-efficacy, barriers and facilitators for physical activity, and are impacted by various processes of change (e.g., consciousness raising, stimulus control, helping relationships, social liberation) (Marshall & Biddle, 2001). To ensure that the campaign addressed these specific behavioral determinants, ODPHP conducted formative, mixed-methods research, which informed campaign development (Bevington et al., 2020; Piercy et al., 2020). The resulting campaign includes messages tailored to contemplators that promote the Guidelines' recommendations. These messages are included a range of communication resources (e.g., fact sheets, posters, videos, interactive tools) available in both English and Spanish (HHS ODPHP, n.d.-a). The campaign's implementation strategy is based on the community-based prevention marketing framework which combines principles of social

marketing and specialized interventions designed specifically for the communities' characteristics and needs (HHS OPDHP, n.d.-b; Bryant et al., 2007).

In 2019, ODPHP worked with two local-health departments to pilot the community-based implementation strategy (HHS ODPHP, 2019-b; HHS ODPHP, 2022). An evaluation of these communities identified promising outcomes (e.g., positive association between reported campaign exposure and awareness, knowledge, physical activity self-efficacy, and behavioral intent). Lessons learned from these initial communities were used to develop the Move Your Way Community Playbook—an implementation guide for other communities looking to implement the campaign (HHS OPDHP, n.d.-b). In 2020, ODPHP designed a Move Your Way pilot evaluation in eight communities to further examine campaign implementation strategies and to study desired outcomes related to campaign exposure. This article summarizes an evaluation of the multi-site Move Your Way pilot test and reports on outcomes across eight communities, comparing those who did and did not report exposure to the campaign. Following the transtheoretical model of behavior change, this evaluation focuses on physical activity outcomes associated with moving from the contemplation to the action stage. Outcomes included: awareness of the Guidelines, knowledge of the Guidelines dosage, intent to become more physically active, physical activity self-efficacy, and reported physical activity behavior.

## Methods

### Pilot Communities' Campaign Implementation Customization

In 2020, ODPHP collaborated with a health education and communication firm to pilot test the campaign in eight communities throughout the United States (Cabarrus County, North Carolina; Chicago, Illinois; Columbus, Ohio; Fairfax County, Virginia; Sioux City, Iowa; Southern West Virginia; Streator, Illinois; Wyandotte County, Kansas). Participating communities were selected based on recommendations from federal colleagues (with knowledge of the communities' previous community health activities) and self-selection (communities expressed interest after webinar). They represented a range of geographic locations, community sizes/types (e.g., urban/suburban/rural), and types of lead organization (e.g., local health department, recreation and parks department, physical activity nonprofit). Lead organizations worked with local coalitions and partners to customize outreach strategies to best fit their community characteristics, audiences, and available resources (HHS OPDHP, n.d.-b). Together with their partners, lead organizations planned and executed a variety of implementation activities, including community events (both in-person and virtual), built environment initiatives, physical activity programming, distribution of Move Your Way materials and messages, and geographically targeted paid online advertisements between March and October (HHS ODPHP, 2020-a-f; HHS ODPHP, 2021-a, b). Examples of community events and physical activity programming

included walking challenges, free and low-cost fitness classes, kids run clubs, and worksite wellness initiatives. Built environment initiatives included adding educational signage to area walking paths or playgrounds that encouraged diverse types of physical activity. Campaign materials and messages were distributed at events/programs, and by healthcare providers in clinical practices, food banks, local health departments and other partners throughout the implementation period. Geographically targeted, paid online advertising in pilot communities were designed to reach intended audiences on the platforms they already use including Facebook/Instagram, Google Display, YouTube, and Snapchat. Eligible ZIP codes were determined during the planning phase, based on service area for the lead organization, and used for the geographically targeted paid advertisements during implementation. While the activities, events, initiatives, and programs varied based on community characteristics and needs, the campaign's look and feel and core messages remained consistent and focused on the following messages: lots of activities count, it all adds up, everyone can be active, and anyone can find an activity that they enjoy and can fit into their life.

### **Evaluation Design and Data Collection**

ODPHP worked with a consumer opinion panel, Gallup Poll, Inc., to conduct an online, cross-sectional survey in each of the eight participating communities for a total of six weeks (November 13–December 23, 2020) following the end of implementation. Human subjects research approval for this study was provided by the Gallup Institutional Review Board.

Survey respondents were recruited by Gallup using an online Qualtrics opt-in panel and through direct mail invitations. Researchers used online-only recruiting for the three largest communities (Chicago, IL; Columbus, OH; Fairfax County, VA), which had large numbers of online panelists. In the five smaller communities where membership in Gallup's online panel were low (Cabarrus County, NC; Sioux City, IA; Streator, IL; Southern West Virginia; Wyandotte County, KS), researchers mailed residents invitations to complete the online survey.

All respondents, regardless of invitation method, completed the survey online. Respondents provided their written informed consent at the beginning of the online survey. The Qualtrics survey programming automatically terminated the survey for anyone who did not consent to participate or did not meet the initial age (18–74 years) or ZIP code screening criteria.

### **Survey Measures**

#### ***Respondent characteristics***

Self-identified information was collected on background variables, including self-identified gender; age; race; identifying as Hispanic, Latino, or of a Spanish background; highest education level achieved; average household income; and urbanicity.

#### ***Exposure to the campaign***

Reported campaign exposure was the primary independent variable in this study. Exposure was measured by asking respondents, (a) "Have you seen, heard, or read anything about the Move Your Way campaign in the past 6 months?" (yes/no), and (b) "Have you seen this Move Your Way logo in the past 6 months?" (yes/no), followed by an image of the Move Your Way logo. A dichotomous exposure variable was created by coding respondents as "exposed" if they answered yes to one or both of the recall questions and "unexposed" if they answered no to both recall questions.

#### ***Awareness of the Guidelines and knowledge of Guidelines dosage:***

Awareness of the Guidelines was assessed by asking respondents, "Have you seen, heard, or read anything about government physical activity guidelines?" (yes/no). Respondents who answered yes or no were coded as being "aware" or "unaware" of the Guidelines, respectively.

Knowledge of the Guidelines dosage was assessed in two parts: knowledge of the aerobic recommendation and knowledge of the muscle-strengthening recommendation. Knowledge of aerobic dosage recommendation was assessed by asking, "What is the minimum amount of moderate-intensity aerobic physical activity the government recommends for adults to get big health benefits?" Respondents chose between six options, one of which was the current dosage recommendation ("150 minutes spread out over a week") (HHS, 2018). Another option represented a historical recommendation ("30 minutes a day, 5 or more days a week") (Pate et al., 1995; HHS, 1996). None of the remaining options reflected historic or current recommendations and were coded as "other." Researchers examined knowledge of the aerobic recommendations in two ways: (a) as a dichotomous variable comparing the current dosage recommendation ("150") against all other responses, and (b) as a categorical variable examining three categories (current "150," historical "30 x 5," and "other"). Knowledge of the muscle-strengthening dosage recommendations was assessed by asking, "How many days a week of muscle-strengthening activity does the government recommend for adults to get big health benefits?" Respondents chose between five options ("At least... 1, 2, 3, or 4 days per week" or "I don't know"). Respondents who selected "At least 2 days per week" were coded as "correct" and all other responses were coded as "incorrect."

#### ***Recent behavior change and behavioral intent***

Recent behavior change was assessed by asking respondents, "Think back to how physically active you were 6 months ago. Since then, has your physical activity level increased, decreased, or stayed the same?" with answer options of "increased," "decreased," or "stayed the same."

Behavioral intent was assessed by asking “How likely are you to become more physically active in the next 6 months?” with response options: “extremely likely,” “somewhat likely,” “somewhat unlikely,” and “extremely unlikely.” Respondents who answered “extremely likely” or “somewhat likely” to become more active were coded as “likely,” while respondents who responded “extremely unlikely” or “somewhat unlikely” were coded as “unlikely.”

### ***Physical Activity Self-efficacy***

Many of the campaign’s messages and resources (e.g., videos) were designed specifically to increase barrier self-efficacy by providing strategies for overcoming common barriers. To measure physical activity self-efficacy, ODPHP adapted the “Self-efficacy for Exercise Scale,” which addressed all barriers identified in campaign formative research (Resnick & Jenkins, 2000). Rather than asking about a respondent’s confidence that “you could exercise three times per week for 20 minutes” as the original scale does, the survey asked respondents to indicate a number between one (“not confident”) and 10 (“very confident”) for each barrier when asked, “How confident are you right now that you could be physically active often enough to stay healthy if: (1) the weather was bothering you; (2) you were bored by the physical activity program or activity; (3) you felt pain when being physically active (4) you had to be physically active alone; (5) you did not enjoy it; (6) you were too busy with other activities; (7) you felt tired; (8) you felt stressed; (9) you felt depressed.” Among respondents who answered all nine questions, researchers created a mean physical activity self-efficacy score by taking the average of respondents’ answers to each of the nine barriers.

### ***Physical activity behavior***

Physical activity behavior was measured using responses to three questions adapted from the National Cancer Institute’s Health Information National Trends Survey (HINTS) 5 Cycle 3 (National Institutes of Health—National Cancer Institute). To measure aerobic physical activity, respondents self-reported the number of days per week they typically perform aerobic physical activity of at least moderate intensity and the average duration (in minutes) of their aerobic physical activity. To measure muscle-strengthening activity, respondents self-reported the number of days per week they typically perform muscle-strengthening activities.

Using these responses, several physical activity behavior variables were created. A “minutes of aerobic activity per week” variable was created by multiplying the self-reported number of aerobic physical activity days per week by the number of minutes per day. For the “met the aerobic recommendation” variable respondents were coded as “yes” if their “minutes of aerobic activity per week” was greater than or equal to 150 minutes, and “no” if less than 150 minutes. Another dichotomous (yes/no) variable was created reporting whether respondents “met the muscle-strengthening recommendation,” coding “yes” for 2 or

more days per week and “no” for 0 or 1 days per week. A third dichotomous (yes/no) variable was created to record whether respondents “met both the aerobic and muscle-strengthening recommendations,” coding respondents as “yes” only if they responded “yes” for both “met aerobic recommendation” and “met muscle-strengthening recommendation.”

### **Statistical Analyses and Data Cleaning**

Individuals were excluded if they reported doing zero days of aerobic physical activity and muscle-strengthening physical activity and indicated that they were “extremely unlikely” to increase physical activity in the next six months. These individuals were determined to be in the pre-contemplation stage of change and, therefore, were outside the intended audience of the campaign.

Differences between exposed and unexposed groups were compared for continuous outcomes (reported physical activity behavior and physical activity self-efficacy) using t-tests and one-way ANOVA with Tukey corrections for multiple comparisons where applicable. Differences between exposure groups were compared for categorical outcomes (awareness of the Guidelines, knowledge of the Guidelines dosage, recent behavior change, behavioral intent, and meeting the Guidelines) using Chi-square tests and polytomous logistic regressions (odds ratios). Statistical significance was defined as a p value < 0.05 for all analyses. All analyses were conducted using SAS software version 9.4 (SAS Institute Inc., Cary, NC, USA).

A complete case analysis by outcome was conducted. Missing data varied across outcomes, with only two variables missing more than 10% (physical activity self-efficacy and number of aerobic minutes per day). Overall, respondents with missing data tended to have a lower income and a lower level of education completed and were non-white and older, compared to those without missing data.

Extreme values in the data were addressed using the International Physical Activity Questionnaire analysis protocol (IPAQ). All values greater than 960 minutes per day (the equivalent of 16 hours of physical activity in a day) were excluded and all values greater than 180 minutes per day were truncated to 180 minutes (e.g., “400 minutes” was recoded as “180 minutes”).

During the survey process, a data collection error occurred in which a value of “1” was auto populated into the text box for the question asking the number of minutes spent doing aerobic activity per day. This meant that respondents would need to remove the 1 before providing their intended response. A number of respondents (n = 515, 12.3%) included a “1” at the beginning or end of their response to the physical activity minutes question and researchers were unable to determine if the value was included intentionally or unintentionally. As part of the data processing, errors were identified such that any value greater than 100 that ended with a “1” was processed and reassigned to the value without the “1” (n = 248) (e.g.,

“121 minutes” was recoded to “12 minutes”) as it was unlikely respondents had intended to end in a single minute rather than rounding to the nearest 0 or 5.

To examine the robustness of the adjusted sample, researchers created a second dataset that excluded any participant who could have been affected by the auto populated 1, excluding all responses that started or ended in 1. This more conservative dataset included 3,101 respondents. All analyses were tested in both the full and conservative datasets. There were no differences in the magnitude or direction of the effects observed in the impacted variables between the full and conservative datasets. Therefore, only the results of the full dataset are included in the present article.

## Results

### Participant characteristics

After applying exclusion criteria, the total sample size for the pilot evaluation was 5,140 individuals. The mean age of respondents was  $48.3 \pm 15.2$  years, ranging from 18

to 74 years. The sample was predominantly female (52.9%) and white (83.5%). More than half of respondents reported having a college degree or higher (61.6%) and living outside a city or urban area (55.3%). An overview of participant characteristics is provided in Table 1.

### Exposure to the campaign

In the total analytical sample, 10.1% of respondents reported that they had “seen, heard, or read anything about the Move Your Way campaign in the past 6 months,” and 11.1% reported seeing the Move Your Way logo in the last 6 months. Based on these responses, 13.5% of the sample was coded as “exposed to the campaign” (7.7% of respondents recalled both the campaign name and logo).

As shown in Table 1, there were significant differences between exposed and unexposed groups for all demographic variables (gender; age; race; identifying as Hispanic, Latino/a, or Spanish origin; highest level of education; household income; and urbanicity) based on chi-square tests.

Table 1: Participant characteristics, in full sample and by reported exposure to the Move Your Way campaign

	Full sample* (n)	Exposed to campaign* (n)	Not exposed to campaign* (n)	P value†
Gender				0.003
Man	2,146 (45.4%)	338 (51.5%)	1,808 (44.4%)	
Woman	2,499 (52.9%)	313 (47.7%)	2,186 (53.7%)	
Another gender	21 (0.4%)	1 (0.2%)	20 (0.5%)	
Prefer not to specify	59 (1.3%)	4 (0.6%)	55 (1.4%)	
Age				<0.001
18 to 24 years	320 (6.2%)	89 (12.8%)	231 (5.2%)	
25 to 34 years	799 (15.5%)	139 (20.1%)	660 (14.8%)	
35 to 44 years	1,044 (20.3%)	211 (30.5%)	833 (18.7%)	
45 to 54 years	937 (18.2%)	113 (16.3%)	824 (18.5%)	
55 to 64 years	1,095 (21.3%)	78 (11.3%)	1,017 (22.9%)	
65 to 74 years	945 (18.4%)	63 (9.1%)	882 (19.8%)	
Race				<0.001
White	4,004 (83.5%)	498 (73.7%)	3,506 (85.1%)	
Black or African American	512 (10.7%)	125 (18.5%)	387 (9.4%)	
American Indian or Alaska Native	125 (2.6%)	25 (3.7%)	100 (2.4%)	
Asian	125 (2.6%)	21 (3.1%)	104 (2.5%)	
Native Hawaiian or Other Pacific Islander	29 (0.6%)	7 (1.0%)	22 (0.5%)	
Hispanic, Latino/a, or Spanish origin				<0.001
Yes	286 (6.1%)	83 (12.8%)	203 (5.0%)	

	Full sample* (n)	Exposed to campaign* (n)	Not exposed to campaign* (n)	P value†
No	4,396 (93.9%)	568 (87.3%)	3,828 (95.0%)	
Education				<0.001
<High School	66 (1.4%)	13 (2.0%)	53 (1.3%)	
High School	670 (14.2%)	88 (13.4%)	582 (14.3%)	
Some college	1,077 (22.8%)	115 (17.5%)	962 (23.7%)	
Associate's degree	577 (12.2%)	59 (9.0%)	518 (12.8%)	
4-year college degree	1,342 (28.6%)	167 (25.5%)	1,175 (29.0%)	
Advanced degree	982 (20.8%)	214 (32.6%)	768 (18.9%)	
Household income				<0.001
Less than \$20,000	458 (10.1%)	60 (9.4%)	398 (10.2%)	
\$20,000–\$34,999	584 (12.8%)	74 (11.5%)	510 (13.1%)	
\$35,000–\$49,000	602 (13.2%)	68 (10.6%)	534 (13.7%)	
\$50,000–\$74,999	826 (18.2%)	88 (13.7%)	738 (18.9%)	
\$75,000–\$99,999	681 (15.0%)	90 (14.0%)	591 (15.1%)	
\$100,000–149,999	791 (17.4%)	129 (20.1%)	662 (17.0%)	
\$150,000–\$199,000	373 (8.2%)	88 (13.7%)	285 (7.3)	
\$200,000 or more	233 (5.1%)	45 (7.0%)	188 (4.8%)	
Urbanicity				<0.001
City or urban area	2,105 (44.6%)	407 (62.1%)	1,698 (41.8%)	
Suburbs	1,336 (28.3%)	141 (21.5%)	1,195 (29.4%)	
Country or rural area	1,274 (27.0%)	107 (16.3%)	1,167 (28.7%)	

\*Values are n (percentage)

†Chi-square for exposure vs. demographic (age, race, education, etc.)

### ***Awareness of the Guidelines and knowledge of Guidelines dosage***

Table 2 shows the results for participant awareness and knowledge of the Guidelines and Guidelines dosages. Within the full sample, 22.4% of respondents reported that they had “seen, heard, or read about government physical activity guidelines.” Exposure to the campaign was associated with the likelihood that respondents were aware of the Guidelines. Among those who reported campaign exposure, 59.2% responded they were aware of the Guidelines, compared to only 16.7% of those who did not report campaign exposure. In fact, those who were exposed had 7.2 (95% CI, 6.1-8.6) greater odds of saying they had seen, heard, or read anything about government physical activity guidelines compared to unexposed respondents.

Regarding knowledge of the Guidelines dosage, those who were exposed to the Move Your Way campaign were more likely to identify the current aerobic and correct muscle-strengthening dosages (Table 2). When examining the dichotomous variable for aerobic dosage (“150” vs. all other responses), those who were exposed to the campaign had 3.4 (95% CI, 2.6-4.4) greater odds of identifying the current dosage recommendation (“150”), compared to unexposed respondents. Over a quarter of respondents selected the historic dosage recommendation, with 29.4% of exposed respondents and 27.1% of unexposed respondents selecting the “30 x 5” option. Those who were exposed had 2.9 (95% CI, 2.4-3.5) greater odds of correctly identifying the muscle-strengthening recommendation (at least 2 days per week) compared to unexposed respondents.

Table 2: Awareness of the Guidelines and knowledge of Guidelines dosage, by reported exposure to the Move Your Way campaign

	Exposed to campaign (n)	Not exposed to campaign (n)	Chi-square P value
<b>Seen, heard, or read anything about government physical activity guidelines</b>			
Yes	401 (59.2%)	721 (16.7%)	<0.001
No	276 (40.8%)	3,601 (83.3%)	
<b>Identified the aerobic recommendation in the Guidelines</b>			
Current recommendations “150 minutes”	96 (14.6%)	196 (4.8%)	<0.001
Other responses	560 (85.4%)	3,887 (95.2%)	
<b>Identified the muscle-strengthening recommendation in the Guidelines</b>			
Correct (“At least 2 days per week”)	177 (27%)	463 (11.3%)	<0.001
Incorrect (All other responses)	479 (73%)	3,620 (88.7%)	

**Recent behavior change and behavioral intent**

Among the full sample, 21.4% (n = 1,074) reported a recent increase in their physical activity in the previous six months. In contrast, 44.4% (n = 2,226) of the full sample reported making no change in their physical activity level in the previous six months, and 34.2% (n = 1,716) reported decreased activity. Respondents who reported campaign exposure were more likely to have changed their behavior, including 42.9% of those exposed to the campaign who reported increasing their physical activity in the last six months (Table 3). When examining the odds of behavior

change compared to those who reported consistent physical activity, those who were exposed to the campaign had higher odds of both increasing and decreasing their activity.

Regarding behavioral intent for physical activity, (Table 3), the majority of respondents (72.3%, n = 3,624) reported being either “somewhat likely” or “extremely likely” to become more physically active in the next six months. Compared to those who were unexposed, respondents who were exposed to the campaign had 1.7 (95% CI, 1.4-2.1) greater odds of reporting being likely to increase their physical activity in the next six months.

Table 3: Recent behavior change and behavioral intent, by reported exposure to the Move Your Way campaign

	Exposed to campaign (n)	Not exposed to campaign (n)	Chi-square P value
<b>Recent behavior change (amount of physical activity in past six months)</b>			
Increased	290 (42.9%)	784 (18.1%)	<0.001
Decreased	195 (28.9%)	1,521 (35.1%)	
Same	191 (28.3%)	2,035 (46.9%)	
<b>Likelihood of increasing physical activity in the next six months</b>			
Likely	544 (80.6%)	3,080 (71%)	<0.001
Unlikely	131 (19.4%)	1,256 (29%)	

**Physical Activity Self-efficacy**

The mean and standard deviation for physical activity self-efficacy score (out of 10, where 10 indicated the most confidence they could be active in the face of the barrier) was 5.1 ± 2.2 SD (Table 4). Respondents who were exposed to the Move Your Way

campaign reported higher combined physical activity self-efficacy scores (5.7 ± 2.2 SD), compared to unexposed respondents (5.0 ± 2.2 SD). Those exposed also reported higher confidence in their ability to be active for each specific barrier, compared to unexposed respondents.

Table 4: Physical Activity Self-efficacy, by reported exposure to the Move Your Way campaign

Barrier to physical activity	Mean (SD)* (n = 4,439)	Exposed to campaign mean (SD)* (n = 618)	Not exposed to campaign mean (SD)* (n = 3,821)	ANOVA P value †	Cohen's D
Combined physical activity self-efficacy score (1–9)	5.1 (2.2)	5.7 (2.2)	5.0 (2.2)	<0.001	0.32
1. The weather was bothering you	5.4 (2.8)	5.9 (2.8)	5.3 (2.8)	<0.001	0.21
2. You were bored by the physical activity program or activity	4.9 (2.7)	5.6 (2.8)	4.7 (2.7)	<0.001	0.33
3. You felt pain when being physically active	4.3 (2.7)	5.3 (2.8)	4.2 (2.7)	<0.001	0.40
4. You had to be physically active alone	6.6 (2.9)	6.9 (2.7)	6.5 (2.9)	0.004	0.14
5. You did not enjoy it	4.6 (2.8)	5.2 (3.0)	4.5 (2.7)	<0.001	0.25
6. You were too busy with other activities	4.8 (2.7)	5.6 (2.8)	4.7 (2.6)	<0.001	0.33
7. You felt tired	4.9 (2.7)	5.5 (2.8)	4.8 (2.7)	<0.001	0.25
8. You felt stressed	5.6 (2.9)	5.9 (2.9)	5.6 (2.9)	0.003	0.10
9. You felt depressed	4.7 (2.9)	5.2 (3.1)	4.6 (2.9)	<0.001	0.20

\*Values are mean and (standard deviation)

†ANOVA P value indicates p value of one-way ANOVA

### Physical activity behavior

As shown in Table 5, there were significant differences between the exposed and unexposed groups for self-reported physical activity variables. Both groups reported average minutes of aerobic activity per week higher than the dosage recommendations of 150 minutes. The exposed group reported significantly more days of aerobic activity per week and days of muscle-strengthening activities per week, according to t-tests. However, for the calculated variable of minutes of aerobic activity per week, exposed respondents reported significantly fewer minutes of aerobic activity per week than unexposed respondents ( $202.1 \pm 229.9$  min/week and  $225.0 \pm 247.1$  min/week, respectively).

Among the full sample, 49.2% (n = 2,064) and 43.1% (n = 2,174) of respondents reported meeting the recommendations for aerobic and muscle-strengthening activities, respectively. Additionally, 30.3% (n = 1,258) of all respondents met the combined aerobic and muscle-strengthening recommendations. Although there were not statistically significant differences in meeting the aerobic recommendation based on exposure (OR = 0.91, 95% CI, 0.76-1.07), exposed respondents were significantly more likely to have met the muscle-strengthening recommendation and therefore the overall guidelines (both aerobic and muscle-strengthening). Exposed respondents had 2.7 greater odds (95% CI, 2.3-3.1) of meeting the muscle-strengthening recommendation, and as a result 1.4 (95% CI, 1.1-1.6) greater odds of meeting the overall Guidelines (both the aerobic and muscle-strengthening recommendations) than unexposed respondents.

Table 5: Physical activity behavior, by reported exposure to the Move Your Way campaign

Variable	n	Exposed to campaign mean* (SD)	Not exposed to campaign mean* (SD)	T-test P value	Cohen's D
Days aerobic activity/week	5,140	3.4 (2.0)	3.0 (2.2)	<0.001	0.19
Average min of aerobic activity per day	4,194	51.4 (43.8)	54.8 (43.5)	0.07	0.08
Days of muscle-strengthening activity/week	5,042	2.5 (2.0)	1.5 (2.0)	<0.001	0.50
Average min of aerobic activity/week	4,194	202.1 (229.9)	225.0 (247.1)	0.03	0.10

\*Values are mean (standard deviation)

### Discussion

Physical activity advocates and researchers have long called for improved communication strategies and the



development of a national physical activity campaign to educate and motivate Americans to get moving (Kay et al.,

2014; Bergeron et al., 2019; Davis, Busso, et al., 2020; Davis, L'Hôte, et al., 2020; National Physical Activity Plan Alliance, n.d.; Kraus et al, 2015). This pilot study evaluation found reported exposure to the Move Your Way campaign was associated with higher reported outcomes, including awareness of the Guidelines, knowledge of the Guidelines dosage, intent to become more physically active, physical activity self-efficacy, and reported physical activity behaviors, compared to individuals who did not report campaign exposure. These findings suggest that increasing exposure to the campaign may help improve physical activity knowledge and its potential to promote behavior change for physical activity contemplators across the United States.

### **Campaign Exposure Associated with Significantly Higher Awareness of the Guidelines**

The outcome of interest with the largest magnitude of difference between groups was awareness of the Guidelines. In fact, nearly 60% of respondents who reported campaign exposure also reported being aware of the Guidelines. This rate is significantly higher than historical measures of awareness, including 22% in 2017 and 36% in 2009 (Piercy et al., 2020; Kay et al., 2014). Given the release of the initial Guidelines in 2008, the 2009 percentage likely accounts for the impact of federal promotion efforts, including the launch, media outreach, and partnerships (Piercy et al, 2014). Increasing awareness of the Guidelines is an important element to shifting cultural norms and creating long-term behavior change. Improved education and awareness can be associated with increase motivation to be physically active amongst those who are the least active. The stark difference in awareness of the Guidelines in this pilot supports continued promotion of the campaign in an effort to increase awareness of the Guidelines.

### **Campaign Exposure Associated with Significantly Higher Knowledge of Guidelines Dosage**

Findings on knowledge of the aerobic recommendations reflect the potential impact of the campaign and, perhaps, lingering effects of historic recommendations. The first physical activity recommendations published by the Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine in 1995 included recommendations that U.S. adults should “accumulate 30 minutes or more of moderate physical activity on most, preferably all, days of the week (Pate et al., 1995; HHS, 1996).” Guidance continued to revolve around a repeated 30-minute recommendation until the first edition of the *Physical Activity Guidelines for Americans* was published in 2008 (HHS, 2008). The recommendation was changed based on evidence that suggested accumulation during the week was more important than a prescribed amount per day (Physical Activity Guidelines Advisory Committee, 2008). Despite the shift to an accumulated 150 minutes each week, mainstream messaging and health communications

continued to focus on 30-minute recommendations (Marshall et al., 2009; How much exercise should the average adult exercise every day, 2021; Why 30 minutes of Physical Activity a Day Isn't Enough, 2021). In this evaluation, it is of note that the percent of respondents who selected the historical (“30 x 5”) dosage was very similar between exposure groups (29.4% of exposed and 27.1% of unexposed), while the larger differences were found between the “150” and “other” responses. This finding suggests that exposure to the Move Your Way campaign is associated with knowledge of the accumulated “150 minute” dosage currently recommended for health benefits.

Muscle-strengthening activity is a key element of a healthy and active life but is often a secondary focus within physical activity promotion. Those who were exposed to Move Your Way were significantly more likely to identify the correct muscle-strengthening dosage than the unexposed respondents, and the percentage of those who were correct in the exposed group (27%) was also much higher than previous research in which only 18% of respondents correctly identified the dosage of “2 or more days per week” (Piercy et al., 2020).

### **Physical Activity Self-Efficacy and Behavioral Intent**

Numerous behavior change theories include physical activity self-efficacy as a precursor to behavior change both generally and when looking at physical activity specifically (Marshall & Biddle, 2001; Prochaska & Velicer, 1997; McAuley & Blissmer, 2000). In this pilot evaluation, the exposed respondents also reported greater physical activity self-efficacy for overcoming specific barriers commonly associated with physical activity (e.g., bad weather, feeling tired, and time constraints). The association between reported campaign exposure and physical activity self-efficacy suggests the potential impact that campaign messaging and implementation had on addressing specific barriers and improving overall confidence in one's ability to be active.

Exposed respondents were also significantly more likely to report intending to be active in the next six months as a measure of behavioral intent. The transtheoretical model connects behavioral intent with moving from the contemplation to preparation stage as an indicator of readiness to change (Prochaska & Velicer, 1997). Further, various health behavior change theories include a connection between intention and behavior and posit that positive changes in intention correlate with similar changes in behavior. A meta-analysis of experimental studies indicates that medium-to-large changes in intention lead to small-to-medium changes in behavior (Webb & Sheeran, 2006).

While data are cross sectional, for this pilot evaluation, the physical activity self-efficacy and behavioral intent findings suggest that the exposure to the campaign is positively associated with important precursors to behavior change. These associations are consistent with what might be expected for those who are in the process of moving from the contemplation stage to the preparation and action

stages for physical activity within the transtheoretical model.

### **Campaign Exposure and Physical Activity Behavior**

This pilot evaluation reported mixed results when examining reported aerobic physical activity behavior. Exposed respondents were active more frequently (more days per week) but for a lower number of minutes throughout the week. This finding may reflect an additional impact of the Move Your Way messages' focus on "lots of things count," including "things you already do" (HHS ODPHP, n.d.-a). These messages emphasize that small bouts of physical activity spread out throughout the day have immediate and long-term benefits and are an important element of a healthy lifestyle. Respondents exposed to these messages may have accessed their behavior differently given this understanding of what counts as physical activity.

The largest behavioral difference detected between exposed and unexposed groups in this pilot evaluation was in meeting muscle-strengthening recommendations. National surveillance data indicate that less than 30% of adults meet the recommendations of muscle-strengthening activities on two or more days a week (HHS ODPHP, 2019-a). In this evaluation, those who reported exposure to the campaign reported 2.7 greater odds of reporting at least two days a week of muscle-strengthening activity than their non-exposed counterparts. This finding suggests that the muscle-strengthening dosages' prominence within the Move Your Way campaign messages and materials has the potential to promote adherence to the overall Guidelines.

In combination, these findings suggest that exposure to the Move Your Way campaign is associated with respondents reporting their having met the overall Guidelines (both the aerobic and muscle-strengthening recommendations).

### **Limitations**

First, the cross-sectional nature of the study design does not allow researchers to infer causality. Future evaluation efforts could include pre- and post-intervention data to examine causal relationships. Additionally, recall bias for the exposure and physical activity variables may have influenced the data collected. Given the structure of survey questions, the results for certain measures (e.g., knowledge of physical activity recommendations) may have been influenced by demographic variables (e.g., education level). The period of implementation (eight months) and data collection (immediately following the intervention) may have influenced the results, particularly around behavior change, which is difficult to accomplish and sustain over time. Further, the campaign was implemented during the early months of the COVID-19 pandemic, which resulted in policies and societal norms unique to the period. The survey used did not capture attitudes or perceptions about the pandemic's impact on respondents' physical activity behavior, so the specific impact on findings is unknown. Although physical activity was often cited as an acceptable





reason for leaving home during the early months of lockdown/social distancing, research suggests the pandemic negatively impacted physical activity behavior (Watson et al, 2021). Future campaign implementation and evaluation could examine the impact of an extended implementation period (e.g., one year). Follow-up surveys distributed in pilot communities after an extended period could examine differences in outcomes across exposure in the long-term (e.g., six months post intervention). Researchers acknowledge that the sample studied was not designed to be representative. ODPHP faced limitations in recruitment methods for survey participants, which varied across communities (e.g., larger communities used online sampling while smaller communities recruited by mail). Efforts to increase exposure at a population level, recruit a more representative sample, and recruit increased numbers of exposed respondents need further study.

### **Conclusions**

Reported exposure to the Move Your Way campaign was associated with greater odds of awareness of the Guidelines, knowledge of the Guidelines dosage, intent to become more physically active, and greater physical activity self-efficacy. Reported campaign exposure was also associated with a greater likelihood of making a recent physical activity behavior change and higher physical activity levels. Given low levels of awareness of the Guidelines, knowledge of recommendations, and physical activity behavior amongst the American public, these findings suggest the Move Your Way campaign may be an effective tool for promoting this important health behavior. Prioritizing messages for physical activity contemplators has potential as an effective approach to improving public health. Public health practitioners, health professionals, and physical activity professionals across federal, state, and local levels can use the Move Your Way campaign resources to promote physical activity. Researchers can collaborate with local organizations to further evaluate campaign implementation and key outcomes. Further, the federal government will use the pilot outcome evaluation results detailed here to guide future physical activity promotion and efforts to promote and expand the campaign to different demographic groups.

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