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Twelve-Month Physical Activity Outcomes in Latinas in the Seamos Saludables Trial

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Abstract

Background—Physical activity interventions designed for Latinas have shown short-term behavior change, but longer-term change and maintenance is rarely measured.

Purpose—To assess physical activity change at 12 months, following 6-month tapered completion of a randomized controlled trial of a physical activity intervention for Latinas.

Methods—Two hundred sixty-six underactive (<60 minutes/week physical activity) Latinas were randomized to an individually tailored, culturally and linguistically adapted physical activity intervention, or a wellness contact control. Participants received the materials through the mail for 6 months, then received booster doses at 8, 10, and 12 months. Minutes per week of moderate to vigorous physical activity were measured by the 7-Day Physical Activity Recall interview at baseline and 6 and 12 months. Data were collected at Brown University between 2009 and 2013, and analyses were conducted in 2013.

Results—At 12 months, increases in moderate to vigorous physical activity were significantly greater in the intervention than in the wellness group (mean difference=52 minutes/week, SE=9.38, $p<0.01$), with both groups showing slight increases in moderate to vigorous physical activity from 6 to 12 months. Intervention participants were also more likely to meet national moderate to vigorous physical activity guidelines (OR=3.14, $p=0.01$).

Conclusions—The intervention was more effective than the wellness control at 12 months, and physical activity increases from baseline to 6 months were maintained, suggesting the intervention may lead to sustainable behavior change.

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Introduction

Latinas in the U.S. report high rates of inactivity (56.3% vs 44.1% for non-Hispanic whites) and related health conditions such as diabetes and obesity.^{1–3} Latinos are also the largest (50.5 million) and fastest growing minority group in the U.S.,⁴ emphasizing the need for intervention in this population. Interventions targeting Latinos have shown improvements in moderate to vigorous physical activity (MVPA)^{5–7}; however, most of these interventions were short term (4–12 weeks),^{8–11} and research suggests that over half of individuals will discontinue an adopted PA program within 3–6 months.¹² Several studies have found maintained MVPA gains in Latinas for 12 months, yet these involved intensive face-to-face or site visits, which may not be sustainable.^{5,13,14} The investigation of longer-term MVPA gains and maintenance following a tapered cessation of an intervention is therefore warranted.

Recently, an RCT was completed of an individually tailored, culturally adapted, mail-delivered Spanish-language MVPA print intervention for Latinas.¹⁵ After 6 months, those randomized to the intervention condition reported significantly more MVPA than a contact control group. Following the main trial, completion of the program was tapered, with participants receiving doses of intervention until a final 12-month assessment. The purpose of this paper is to assess MVPA gains from a tailored, home-based MVPA intervention for Latinas at 12 months. It is hypothesized that MVPA gains from baseline to post-intervention (6 months) would be maintained at 12 months, and the intervention condition would still report significantly greater MVPA at 12 months than the control group.

Methods

Design

Seamos Saludables is an RCT of a culturally and linguistically adapted, individually tailored MVPA intervention for Latinas versus a wellness contact control condition. Six-month main trial MVPA outcomes and a description of the protocol are reported elsewhere.^{15,16} Intervention participants ($n=132$) received materials through the mail 11 times during the first 6 months, then booster doses at 8, 10, and 12 months, with a final assessment at 12 months. Spanish-language materials were individually tailored based on participants' responses to monthly questionnaires about their thoughts, feelings, and behaviors surrounding MVPA, and were culturally adapted for Latinas based on extensive formative research (e.g., translation/back-translation, focus groups on barriers/intervention preferences for Latinas, cognitive interviews to ensure translation of key intervention messages, adaption of materials for low literacy levels¹⁷). The majority (86.4%) reported reading most or all study materials. The wellness condition ($n=134$) received health information on wellness topics (excluding MVPA), delivered on the same schedule as the intervention. For the current study, the primary outcome variable was MVPA at 12 months.

Setting and Sample

Participants were adult Latinas (as defined by the U.S. Census Bureau) from the New England area. Only underactive participants (<60 minutes/week of MVPA) were included to

target those with the greatest chance of improving MVPA. Eligibility was determined using the Physical Activity Readiness Questionnaire, a screening survey to determine safety of engaging in unsupervised MVPA. Participants were aged 40.67 (SD=9.98) years on average, and predominantly Dominican or Colombian (65%). Most were born outside the U.S. (93.6%) and spoke primarily Spanish in the home (81.2%). Nearly half (46%) had some college education, 25% did not finish high school, and 53.6% had a yearly family income < \$20,000. A full description of the study sample is published elsewhere (Pekmezi et al.,¹⁶ Marcus and colleagues¹⁵). Of the 266 randomized participants, 215 (81%) provided data at 12 months. Data collection occurred in 2009–2013; analyses were conducted in 2013.

Measures

The primary outcome measure, the 7-Day Physical Activity Recall (PAR) interview,¹⁸ was completed at baseline, 6-, and 12-month assessments. The 7-Day PAR has demonstrated acceptable reliability, internal consistency, congruent validity with more objective measures of PA,^{19,20} and is sensitive to changes in MVPA over time.^{21,22} Detailed descriptions of all measures have been previously published.¹⁶

Statistical Analyses

Preliminary analyses of changes in MVPA over time were explored using ANOVA. A mixed-effects regression model with subject-specific intercept was used to test effects of treatment on mean minutes/week of MVPA at 12 months. Models were adjusted for baseline MVPA and variables not balanced by randomization (blood pressure and generation). Intent-to-treat analyses were conducted. As mixed-effects models use a likelihood-based approach to estimation, direct imputation of missing 12-month outcomes was not required.

As a secondary outcome, differences in percentage of participants meeting national MVPA guidelines (150 minutes/week)²³ at 12-months were assessed. Unadjusted proportions (assuming missing data did not meet criteria) and ORs from regressing probability of meeting guidelines onto treatment assignment and covariates not balanced by randomization (blood pressure and generation) were reported.

Results

Unadjusted means of MVPA over time showed that 6-month gains were maintained and slightly increased at 12 months (Figure 1). Model results indicated a significant treatment effect from baseline to 12 months, such that intervention participants reported more minutes/week of self-reported MVPA compared to wellness participants at 12 months, controlling for baseline (Table 1; mean difference=51.99, SE=9.38, $p<0.01$). Analysis of residuals and potential effects of outliers did not reveal any significant effects.

At 12-month follow-up, 16.67% of intervention participants met national MVPA guidelines versus 5.97% of wellness participants. In adjusted models, odds of meeting guidelines were more than three times higher in intervention than in wellness participants (OR=3.14, $p=0.01$).

Discussion

At 12 months, minutes/week of MVPA were significantly greater in the intervention versus the wellness group. Main trial findings (6-month changes in MVPA) were maintained at 12 months, and slightly increased (though not significantly). Intervention participants were also more than three times as likely to meet national MVPA guidelines. This therefore represents a promising approach to promoting sustained MVPA engagement among initially sedentary Latinas with minimal contact from study staff. Interestingly, the control group also reported small, yet significant, increases in MVPA from baseline to 12 months, suggesting that this study attracted Latinas motivated to become healthier, and wellness information on topics other than MVPA may have inspired a more active lifestyle.

Adherence to MVPA may speak to the appropriateness of the intervention content and delivery channel. Extensive formative research was conducted to ensure the program met the needs and preferences of the target population. Because Latinas often cite family responsibilities and limited transportation as barriers to MVPA,^{24,25} a home-based intervention may suit this group well. Other strengths included a diverse sample of low-acculturated, low-income Latinas, representing a population with limited access to health resources, and limited staff contact to allow for low-cost widespread dissemination.

Limitations include potential bias of self-report measures of MVPA, which, though correlated with objective measures, often overestimate MVPA.²⁶ Additionally, although women in the intervention group were more likely to meet national MVPA guidelines, only 16% met guidelines at 12 months. Additional intervention efforts may be necessary, such as booster calls/texts/e-mails or a longer intervention phase. Also, intervention participants received some materials after 6 months, thus these results speak to tapered maintenance (versus no longer receiving intervention). Lastly, the sample was relatively healthy, thus these findings may not generalize to Latinas with chronic illnesses such as diabetes. Future research should expand to these populations, which may benefit especially from regular MVPA.

Conclusions

An individually tailored, home-based intervention was effective in promoting and maintaining MVPA among inactive Latinas. Given the potential for broad reach, such programs may provide Latinas with health benefits associated with longer-term engagement in MVPA.

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BHM directed study design, data acquisition, data interpretation, and obtained funding. SD was responsible for data management and analysis. DP contributed to study design, along with formative research and manuscript

preparation. BL participated in data interpretation and manuscript preparation. BM contributed to study design and manuscript preparation. BB, KG, KM, and PT contributed to study design and data acquisition. All authors were involved in the revision process, and read and approved the final manuscript.

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Figure 1.

Changes in physical activity over time in the intervention and control groups (Error bars show 95% confidence intervals).

*Note: p-values refer to between-group changes in moderate to vigorous physical activity over time

Table 1

Fixed effect estimates from regression of 12 month self-reported MVPA on treatment assigned

<i>PAR</i>	b	SE	T	p
Intercept	−15.24	36.90	−0.41	0.68
Intervention	−1.03	8.45	−0.12	0.90
Time	40.29	8.68	4.64	<.001
Intervention x Time	53.01	12.47	4.25	<.001

MVPA, Moderate to Vigorous Physical Activity

Boldface indicates statistical significance (p<0.05).

Models adjusted for baseline MVPA and variables not balanced by randomization at baseline (generation status and blood pressure).