



Short Communication

Physical activity as a coping strategy for smoking cessation in mid-life and older adults



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ABSTRACT

Smoking prevalence for those ages 45–65 is higher than the national average and the number of mid-life and older smokers is expected to increase as baby boomers age. Cessation, even after age 65, confers health benefits. Both physiologic and psychological mechanisms support use of physical activity (PA) as a coping tool for quitting and improving health. This study focused on use of PA for coping with urges to smoke, factors associated with use, and whether use of PA was associated with abstinence at 12 months for 799 smokers ages 50 and older. Only 11.6% used PA for coping, with walking the most common PA. Females were more likely to use PA relative to males. Though in the predicted direction, use of PA was not significantly associated with 12-month abstinence. Male gender and higher baseline self-efficacy to quit were associated with 12 month abstinence. Encouraging use of PA during smoking cessation does not impede quitting and may improve health outcomes. Further research on whether PA increases abstinence with a larger sample of mid-life and older adults is indicated.

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1. Introduction

Approximately 46 million adults currently smoke in the United States. Smoking prevalence for those ages 45 to 65 (21.4%) is higher than the national average (19.0%) (CDC, 2012). Although smoking prevalence among adults 65 years of age or older (8.4%) is lower than the national average, as baby boomers age, the actual number of mid-life and older smokers will continue to increase (CDC, 2013). Tobacco cessation confers significant health benefits regardless of age or disease state (Nicita-Mauro, Maltese, Nicita-Mauro, Lasco, & Basile, 2010; Taylor, Hasselbad, Henley, Thun, & Sloan, 2002). Quitting smoking is the most effective way of decreasing smoking-induced disease for older smokers, with a significant decline in all causes of mortality, as well as chronic obstructive pulmonary disease (COPD), coronary artery disease, lung cancer and cerebrovascular disease among older adults who quit (Burns, 2000; Ossip-Klein et al., 2000; Ossip-Klein, Pearson, McIntosh, & Orleans, 1999; Rimer, Orleans, Keintz, Cristinzio, & Fleisher, 1990; Schofield, Kerr, & Tolson, 2007). Given the growing numbers of mid-life and older smokers, there is an increasing need for smoking cessation interventions targeting this understudied population (Ossip-Klein et al., 1999).

Older smokers are less likely to make a quit attempt, but more likely than younger smokers to be abstinent at three months when they do try (Burns, 2000; Ferguson, Bauld, Chesterman, & Judge, 2005; Hatziaandreu et al., 1990). The most common barriers to cessation in older smokers include cravings, irritability and tension, followed by weight gain, boredom, failing and trouble concentrating (Kerr, Watson, Tolson, Lough, & Brown, 2004; Rimer et al., 1990; Schofield et al., 2007).

Participation in physical activity (PA) can potentially help smokers overcome these barriers while improving overall health. PA and exercise have been found to reduce depressed affect, attenuate cravings and withdrawal symptoms, decrease smoking-related stress, tension, and desire to smoke in the presence of a lit cigarette following cessation, improve poor concentration, and potentially decrease weight gain (Daniel, Cropley, Ussher, & West, 2004; Haasova et al., 2012; Ussher, Taylor, & Faulkner, 2012; Ussher, West, Doshi, & Sampuran, 2006; Van Rensburg, Taylor, & Hodgson, 2009; Williams et al., 2011). In addition, PA can prevent or improve outcomes for chronic diseases and cognitive decline that differentially affect mid-life and older adults, and improve overall quality of life (Garber et al., 2011; King & King, 2010). Thus, PA may provide a coping strategy for increasing success in quit attempts.

Prior intervention research has demonstrated some evidence for a short term effect of PA on abstinence. However, evidence for a long-term effect is minimal, though some studies indicate an association between engaging in PA and abstinence (Abrantes et al., 2009; Prochaska et al., 2008; Taylor & Katomeri, 2007; Ussher et al., 2012; Ussher, West, McEwen, Taylor, & Steptoe, 2003; Whiteley et al., 2012). Studies have

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generally been limited by small sample sizes, interventions of insufficient intensity, and poor maintenance of PA.

Intervention research has generally focused on younger or broader age populations, with little data available for mid-life and older adults. Use of PA may be particularly effective for aging adults for whom the immediate health benefits of PA and smoking cessation may be more apparent than for younger groups (Ossip-Klein et al., 1999).

This study examines data specifically for smokers ages 50 and older with three objectives: to identify frequency and types of PA used for coping, to identify predictors of reporting PA as a coping strategy, and to determine whether use of PA is associated with 12 month abstinence prevalence.

2. Methods

2.1. Participants

This is a secondary data analysis of an existing dataset (Project 50) from an NIH randomized controlled trial of tobacco cessation intervention for mid-life and older smokers conducted at the University of Rochester Medical Center from 1996 to 2000 (McIntosh, Ossip-Klein, Spada, & Burton, 2000; Ossip-Klein, Carosella, & Krusch, 1997; Ossip-Klein et al., 2000, 1999). Participants were ages 50 and older, smoked ≥ 10 cigarettes per day for ≥ 10 years, planned to quit within 3 months, and lived in a 15-county area in New York State. The study did not target PA for intervention.

The complete dataset includes 1975 subjects, of whom a total of 1640 responded to the 12-month follow-up telephone interview (83% follow-up). The sample was narrowed to include only respondents reporting a 24-hour quit attempt during the past 12 months ($n = 799$), who were thus eligible to report coping strategies.

2.2. Procedure

Baseline data were collected using a self-administered survey of smoking status, readiness to quit, smoking history, and other demographic data. Follow-up telephone interviews were conducted at 6, 12 and 18 months. The current analysis used baseline data as well as PA and abstinence data collected at 12 months to evaluate types of PA, factors associated with use of PA and whether use of PA as a coping strategy is associated with smoking cessation.

2.3. Measures

Abstinence was defined by 7 day point-prevalence abstinence at 12 months, defined as not smoking a cigarette (even a puff) or using any other form of tobacco in the last 7 days (per Hughes et al., 2003 recommendations). Self-reported abstinence was verified by a significant other. If the significant other reported that the subject smoked or the subject refused to let the interviewer contact the significant other, the subject was reclassified as a smoker.

Physical activity was defined based on guidelines and recommendations from the CDC, AHA and American College of Sports Medicine (ACSM) as any bodily movement produced by skeletal muscles that result in energy expenditure above a resting rate (Centers for Disease Control, Prevention, 2011; Pate et al., 1995). For clarity, the CDC definition of PA differs from the CDC definition of exercise, which is a more intense and structured form of activity and may be less appropriate for the target population (Centers for Disease Control, Prevention, 2011). PA was assessed from an open-ended item at 12 months asking what subjects said to themselves or did when tempted to smoke. Responses were coded for presence of PA and type. Two raters independently coded the first 100 records with 100% agreement. A single rater coded subsequent records.

2.4. Statistical analysis

Summary statistics provided descriptive data, followed by bivariate analyses (chi-square, t-test, ANOVA) to examine differences for individual variables between those who did and did not use PA to cope and those who were and were not abstinent at 12 months. Based on prior research, variables examined for relation with coping were age, gender, race, marital status, education (\leq high school, some college, \geq college), whether participant lives alone (yes/no), self-efficacy (based on 1–10 rating of confidence in quitting), and general health status (excellent, good/very good, fair/poor). Covariates examined for relation with abstinence included gender, race, living alone, education, years smoked, number of cigarettes/day, use of nicotine replacement therapy, self-efficacy (confidence in quitting), baseline PA, other home smokers, number of previous quit attempts, body mass index (BMI), two items based on the SF-12 (depressed mood and perceived health status; Hays, Sherbourne, & Mazel, 1995), and intervention condition. Potential multicollinearity was examined using correlations with no comparisons approaching an a priori strength of $r = 0.80$. The final multivariable models (full model logistic regressions) controlled for intervention status and self-efficacy, and included variables significant at $p \leq .10$ in bivariate analyses. The Hosmer–Lemeshow Chi-Square was used to determine goodness of fit of the models. All analyses were performed using SAS version 8 (The SAS Institute, Inc., Cary NC).

3. Results

Subject characteristics are presented in Table 1. Though about half reported engaging in PA at baseline (58.7%), only 11.6% ($N = 93$) of subjects reported using PA as a coping strategy. For these subjects, walking was the most popular type of PA (64.5%), followed by “exercise,” (22.6%), housework (7.5%), gardening (8.6%), and other (e.g., Tai Chi, swimming, bicycling; 16.1%).

3.1. Women use PA to cope during a quit attempt

Chi-square analysis of differences between those who did and did not use PA to cope revealed one statistically significant variable at $p < 0.05$, female gender (14.31% vs. 7.42% females vs. males, respectively; $\chi^2(1) = 8.77, p = 0.003$), and one additional variable at $p < .10$, baseline PA (13.55% vs. 9.17% yes vs. no, respectively, $\chi^2(1) = 3.54, p = 0.06$). These variables were entered into the logistic regression along with intervention group and self-efficacy as covariates. The Hosmer–Lemeshow Chi-Square was not significant, demonstrating an adequate fit for the model ($\chi^2(8) = 5.54, p = 0.70$). Results (Table 2) identified female gender as the only characteristic to significantly predict the use of PA for coping during a quit attempt (OR = 2.03, 95% CI: 1.24–3.34).

3.2. PA is not associated with abstinence at 12 months

Four variables were associated with 12 month abstinence at $p \leq 0.05$ in bivariate analyses: male gender (males: 40.00%; females: 28.63%; $\chi^2(1) = 11.09, p = 0.0009$), higher baseline self-efficacy (quitters: $M = 6.07, SE = 0.15$; non-quitters: $M = 5.58, SE = 0.11$; $t(797) = 2.61, p = 0.009$), less depressed mood (quitters: $M = 4.50, SE = 0.07$; non-quitters: $M = 4.27, SE = 0.06$; $t(621.46) = 2.65, p = 0.008$; higher score indicates less depressed mood), and no other home smokers (none: 35.22%; any other home smokers: 28.02%; $\chi^2(1) = 3.85, p = 0.0497$). These covariates, along with intervention condition and PA, were entered into the logistic regression model. The Hosmer–Lemeshow Chi-Square was not significant, indicating an adequate fit for the model ($\chi^2(8) = 4.70, p = 0.79$). Though in the predicted direction, PA was not significantly associated with abstinence (36.56% vs. 32.58% for quitters and smokers; OR = 1.24, CI: 0.78–1.98) (Table 2). Two variables were associated with 12-month abstinence: male gender

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