



Shorter communication

Mindfulness and acceptance are associated with exercise maintenance in YMCA exercisers[☆]Christi S. Ulmer^{*}, Barbara A. Stetson, Paul G. Salmon

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ABSTRACT

Although most U.S. adults have initiated an exercise program at some time, only a fraction are able to maintain consistent exercise. Instead, research suggests that intermittent exercise is commonplace among U.S. adults, underscoring the importance of identifying factors associated with consistent exercise at a level that promotes health and long-term maintenance of this activity. We proposed a theoretical model in which mindfulness and acceptance may promote exercise initiation and maintenance. Mindfulness, acceptance, and suppression were examined as a function of exercise status in 266 YMCA exercisers. Those who were successful at maintaining exercise tended to score higher on measures of mindfulness and acceptance, and lower on measures of suppression. Findings are discussed in light of our proposed theoretical model in which exercisers having greater mindfulness and acceptance are less reactive; responding with more balanced appraisals to threats to their exercise regimen which in turn promotes increased exercise maintenance. Future studies should utilize longitudinal design to examine causal relationships between variables.

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Introduction

With escalating rates of obesity and associated chronic disease, it is critical that health care providers gain a better understanding of the factors that support their patients' ability to achieve and sustain recommended levels of physical activity. Although most US adults have initiated exercise programs at some point in their lives (Sallis et al., 1990), research suggests that considerably fewer adults consistently meet guidelines for leisure-time physical activity (Adams & Schoenborn, 2006). About half of adults are likely to drop-out of structured exercise programs within 6 months of initiation or fail to maintain physical activity at the intended level (Buckworth & Dishman, 2002; Marcus, Bock, & Pinto, 1997).

Interventions designed to increase physical activity are often effective, but the mechanisms by which these interventions work are only partially understood. In our efforts to better understand factors that promote physical activity, it may be important to consider the 'lived' experience of physical activity, which for many is marked by pain, stiffness, soreness, low perceived self-efficacy,

and other negative qualities, especially among those who are initiating a physical activity regimen. These unpleasant, avoidance-promoting experiences may at least partially account for low adherence and maintenance rates. The introduction of novel constructs – such as mindfulness and acceptance – into the physical activity literature is warranted because they offer a means of exploring the immediate or short-term experience of physical activity, and the reasons for problematic adherence and maintenance despite the long-term benefits. Mindfulness and acceptance have emerged in recent years as substantive constructs that seem to exert their influence across numerous psychological domains (cognitive, affective and behavioral) relevant to varied mental health issues. "Mindfulness" – has been defined as "non-judgmental, present-oriented focused attention (Kabat-Zinn, 2003)", and psychological acceptance has been defined as, "the willingness to remain in contact with and to actively experience particular private experiences (e.g., bodily sensations, emotions, thoughts memories, behavioral predispositions) that seem to accompany functionally useful overt behaviors, pg. 2 (Hayes, Bissett, et al., 1999)". Experiential avoidance is the conceptual opposite of acceptance and is described as "the tendency to try to change or avoid difficult thoughts and feelings, pg. 993, (Gifford & Lillis, 2009)". In acceptance-based therapeutic approaches, suppression, the "conscious effort to avoid a particular thought (Wegner, Schneider, Carter, & White, 1987)", is considered to be one of the primary emotion regulation strategies utilized to avoid emotionally

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distressing experience (Hoffmann & Asmundson, 2008). Thus, suppression is congruent with experiential avoidance and counter to acceptance.

These constructs are central aspects of newly developed clinical interventions that have been effective in improving mental and physical well-being (Baer, 2003; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Among the best known of these interventions are the Mindfulness-Based Stress Reduction (MBSR) program of Kabat-Zinn and colleagues (Kabat-Zinn, 1990), and Hayes et al.'s Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999). In spite of the success of these interventions in certain domains, relationships between mindfulness, acceptance, and health-promoting behaviors in healthy adults have received very little attention in the literature, although preliminary results are promising.

Mindfulness and acceptance have been central components of several health behavior change interventions. Mindfulness-based interventions have been found to reduce coronary heart disease risk (Edelman et al., 2006), and lower BMI and increase physical activity (Tapper et al., 2009). ACT-based behavioral interventions have been used successfully for weight loss (Lillis, Hayes, Bunting, & Masuda, 2009), smoking cessation (Gifford et al., 2004), and blood glucose regulation in type 2 diabetes (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007).

Mindfulness and acceptance-based (MAB) interventions have also been successfully employed to reduce anxiety and depression (Baer, 2003; Hayes, Follette, & Linehan, 2004), a benefit that has also been consistently demonstrated in exercise research. The anxiolytic effects of exercise are comparable to those for CBT for anxiety and better than those of other anxiety treatments (Wipfli, Rethorst, & Landers, 2008), and exercise confers benefits for depressed mood that are comparable to cognitive therapy (Mead et al., 2009). Based upon the findings of MAB health interventions cited above, one could theorize that mindfulness and acceptance promote improved psychological well-being which in turn promotes an increased ability to initiate and maintain exercise. However, relationships between mindfulness, acceptance and exercise have yet to be investigated.

The conceptual basis of mindfulness described herein rests on the transactional model of stress first proposed by Lazarus and Folkman (1984) and subsequently applied by Kabat-Zinn (1990) to a mindfulness-based stress reduction (MBSR) intervention model. The model proposes that non-judgmental, present-moment awareness fosters effective, responsive appraisal of ongoing events in a manner that counteracts habitual cognitive and physiological reactions. Applied to exercise, the model predicts that sensations associated with exercise initiation and maintenance – some of which are inevitably unpleasant or even painful – would elicit balanced appraisals of experiences that might otherwise lead to avoidant or suppressive behaviors (e.g., exercise drop-out). In the current study, we examined mindfulness, acceptance, and suppression as a function of exercise status in YMCA exercisers to empirically evaluate this model as applied to exercise.

Method

Participants

Participants were adult community exercisers ($N = 226$) recruited from seven regional YMCA facilities located in either Louisville, Kentucky or Southern Indiana. Participants were primarily middle-aged (M age = 49.96, $SD = 14.73$) Caucasian ($N = 194$, 85.8%) females ($N = 143$, 65%) with a Mean BMI of 26.62 ($SD = 5.73$). Most participants were married ($N = 162$, 71.7%) with no children in the home ($N = 133$, 61.6%) and had some college

education ($N = 203$, 89.8%). About half of participants were employed full-time ($N = 120$, 53.1%), about 1/5 were retired ($N = 45$, 19.9%).

Procedures

Participants were screened at recruitment to assure that they were at the facility to exercise, and were at least 21 years of age. There were no other criteria for participation. Participants were approached upon entering or leaving the YMCA facilities and invited to participate in a study on the topic of exercise and health behaviors. Those who assented received a description of the study and signed an informed consent document. They were then given a packet of study materials and a postage-paid envelope with instructions to return it within two weeks.

Measures

Exercise maintenance

Following from the premise that consistent exercise produces greater health benefits than intermittent exercise, we examined self-reported exercise maintenance over the previous year to facilitate a comparison of participants on exercise consistency. Exercise maintenance status was determined using the following questions from an exercise status questionnaire developed for this study: 1) "Have you exercised regularly for the past year?" (Regular Exerciser); 2) "Over the previous year, have you missed 1 full week of exercise?"; 3) "Over the previous year, have you missed 2 continuous weeks of exercise?"; and 4) "Over the previous year, have you missed 3 continuous weeks of exercise?" Dichotomous variables (yes/no) were created from participants' response to these items, and responses were then collapsed to create an ordinal variable reflecting the number of missed weeks of exercise.

Achievement of activity guidelines

In addition to assessing the consistency of exercise (exercise maintenance) among study participants, we also wanted to know if participants were meeting federal guidelines for physical activity since adhering to these guidelines should confer specific health benefits. Although more recent guidelines are available, the current study was designed to assess adherence with the federal guidelines for physical activity in effect when the study was conducted. Namely, that "all Americans engage in moderate intensity physical activities for at least 30 min on 5 or more days of the week, or if they engaged in vigorous-intensity physical activity for 3 or more days per week for 20 or more minutes per occasion (Centers for Disease Control and American Academy of Sports Medicine, 1995)." The International Physical Activity Questionnaire (IPAQ; Craig et al., 2003) was used to quantify physical activity for purposes of determining whether guidelines were achieved. The IPAQ is a nine-item questionnaire in which the respondent provides the number of days per week and minutes and hours per day spent in various activities over the previous one-week period. Based upon self-reported physical activity on the IPAQ for the "last 7 days", adherence to federal physical activity guidelines was determined using total number of minutes in moderate to vigorous activity per week.

Success in meeting exercise goals

Self-reported perceived success in meeting exercise goals was determined using the Revised Causal Dimension Scale (CDS; McAuley, Duncan, & Russell, 1992). The CDS is a measure of causal attributions regarding the perceived cause for an event. The exercise version of the measure includes the following statement at the top of the page, "Please list the main reason why you have been

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