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Author manuscript

*Ann Behav Med.* Author manuscript; available in PMC 2016 October 01.

Published in final edited form as:

*Ann Behav Med.* 2015 October ; 49(5): 783–784. doi:10.1007/s12160-015-9722-3.

## Both self-paced and intensity-prescribed exercise lead to inadequate exercise volume: A case for leveraging mindful awareness and values clarity to promote exercise behavior

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Williams and colleagues' recent paper [1], *Recommending self-paced exercise among overweight and obese adults: A randomized pilot study*, extends research demonstrating positive associations between self-paced exercise and affective responses to, and perceived autonomy for exercise [2–4]. The authors found that low-active participants assigned to a self-paced walking prescription walked significantly more minutes per week than participants assigned to a moderate-intensity walking prescription. There were no significant differences in intensity of exercise performed between groups.

These findings suggest a shift in the way health professionals and researchers promote exercise to the public is warranted. Instead of prescribing moderate intensity exercise for a minimum of 150 minutes per week, perhaps we ought to encourage people to “do what feels good.” But, before we throw the exercise prescription baby out with the bathwater, note that just two weeks into the Williams et al study, participants in both conditions were already falling short of the goal to walk 150 minutes per week [1]. By six weeks, participants walked only 50% of this goal on average. While some exercise is certainly superior to no exercise [5], two studies in the April 2015 issue of *JAMA Internal Medicine* underscore the benefits of exercising more than 150 minutes per week at intensities that do not always feel good, and may, at times, feel outright awful [2]: Arem and colleagues [6] showed that maximal benefits for reduced mortality came with exercise 3–5 times beyond minimal recommendations, and Gebel and colleagues [7] showed a strong inverse relationship between more vigorous-intensity exercise and all-cause mortality.

The Williams et al. findings demonstrate that fostering perceived autonomy (e.g., by encouraging self-paced exercise) may be an inroad to promoting intrinsically motivated exercise behavior [1], but in order to maximize the health benefits from exercise, a focus on other intervention strategies may be necessary. According to Self Determination Theory

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**Conflict of Interest:** The authors declare that they have no conflict of interest.

**Ethical approval:** Not applicable to this commentary – no data involving human subjects were collected.

**Informed consent:** Not applicable to this commentary – no data involving human subjects were collected.

(SDT), behaviors performed for reasons other than the inherent enjoyment of the behavior itself are extrinsically motivated, but may still be self-determined [8]. From our perspective, motivation to exercise for optimal health benefits (at higher intensities and volume) would likely be characterized as “integrated regulation;” an internalized form of *extrinsic* motivation. Consistent with SDT, the relevant regulatory strategies to be emphasized in interventions would include personal importance, conscious valuing, and mindful awareness [8,9].

Fortunately, there is an empirically supported intervention model that targets exactly these regulatory strategies: Acceptance-based behavioral interventions, born from acceptance and commitment therapy (ACT), have shown promise for modifying maladaptive behaviors [10,11], and promoting adaptive behaviors – including exercise behavior [12–14]. The goal of acceptance-based approaches is to foster “psychological flexibility,” defined as mindful awareness and acceptance of aversive experiential content (unpleasant thoughts, feelings, emotions, sensations – all common to high volume/high intensity exercise), and increased focus on the consistency of behavior with one’s values [15]. We believe these strategies, *delivered in combination* with an autonomy supportive approach as suggested by Williams et al., could be leveraged to promote exercise behavior at a volume and intensity that would optimize health benefits.

## Acknowledgments

Preparation of this commentary was supported in part by the National Cancer Institute of the National Institutes of Health under Award Number F31CA180483. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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