

Chapter 14

Mindfulness in Physical Activity

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Chapter Overview

Mindfulness refers to being fully present in the moment; attending to the sights, sounds, thoughts, and physical sensations as they come and go. In recent years, exercise psychology researchers have become interested in understanding how the particular qualities of mindfulness shape physical activity experiences and outcomes. Research findings show the potential for mindfulness to support more pleasurable exercise experiences and exhibit more positive embodiment. Evidence also shows that engaging in various forms of mindful movement (e.g., walking, yoga) may support positive mental health outcomes, engagement in healthy behaviors, and the development of trait mindfulness. Mindfulness also fits well with current theories of exercise motivation and is linked with key motivation variables such as need satisfaction and autonomous forms of motivation. Mindfulness-based interventions even suggest that helping individuals develop mindfulness skills may be an effective strategy for increasing physical activity behavior. Thus, mindfulness has demonstrated its relevance to many of the topics that are of interest to exercise psychology researchers, from motivation to mental health to body image.

Why Be Mindful While Moving?

Although research on mindfulness has grown rapidly over just the last few decades, mindful forms of movement have a long, rich history. Today, this long tradition of mindful movement is merging with contemporary research methods to produce new knowledge of the potential benefits of being mindful during physical activity. Current definitions of mindfulness tend to include two key parts. The first part relates to awareness of and attention to present-moment experience, rather than thinking about the past or the future (Bishop et al., 2004; Brown & Ryan, 2003). Present-moment experiences can include one's thoughts, emotions, physical sensations or environment. For example, as you mindfully walk along a beach, various thoughts, the sound of waves crashing, and the feeling of smooth, wet sand giving way beneath your feet might naturally pass in and out of conscious awareness. Alternatively, you may choose to sit on the beach to watch the sunrise focusing all of your attention on that visual stimulus. Both this focusing of attention and open awareness are ways of directing attention mindfully.

The second part of the definition relates to attitude or the characteristics of present-oriented attention. It is not enough to simply be present. One must also be open, accepting, nonjudgmental and even curious about the things that are passing in and out of awareness. Without this second part of the definition, one is not truly being mindful. This definition highlights the nature of mindfulness as an experiential state. One can be more or less mindful on a moment to moment basis and this reflects one's level of *state mindfulness*. We can assess mindfulness as a state or we can examine it as is more commonly done, as a trait. *Trait mindfulness* refers to one's tendency or general disposition to be mindful throughout one's day or across situations. As one might expect, higher levels of trait mindfulness predict higher state mindfulness, but they have also demonstrated independent effects when predicting certain outcome variables (Brown & Ryan, 2003). With these definitions and distinctions in mind, we will first explore examples of mindful movement and why being mindful during physical activity matters for one's experiences in the moment as well as longer term outcomes. We will then explore the role that mindfulness might play in motivational processes within contemporary physical activity motivation theory and describe physical activity interventions.

Learning Exercise One

Check your recall and write down the two key parts of the definition of mindfulness. Next, let's put mindfulness into action during a walking exercise. You can walk inside your home or outside, for a long time or just a few moments. While you are walking, see if you can apply mindful attention to all of the sensations of walking. This could include the movement of your arms, the contact between your feet and the ground and how it changes throughout each step, or muscular contraction in your legs, etc. Allow each sensation to arise in your awareness and then allow it to fade away. If it is really challenging to stay present with the sensations of walking, select just one focus of attention (e.g., your feet) and keep coming back to this target when you become distracted. How did this experience feel? What was difficult about it? What did you learn about yourself?

What is Mindful Movement?

During mindful movement, participants intentionally bring their attention to the experience of moving their body with an attitude of acceptance and nonjudgment that is characteristic of mindfulness more generally (Asztalos et al., 2012). This might include their breath, physical sensations, thoughts, and emotions. Moving mindfully requires deliberate, conscious attention be brought to the experience of

moving. Popular forms of mindful movement include walking, tai chi, yoga, qi gong, Feldenkrais, and pilates. Research on the effects of yoga has grown more rapidly than research on other forms of mindful movement, perhaps due to its rapid acceleration in popularity among the general public. In both 2012 and 2017, yoga was the most commonly used complementary (i.e., outside of traditional Western medicine) health approach in adults in the United States (Clarke et al., 2018). From 2012 to 2017, the use of yoga in the last 12 months increased from 9.5% to 14.3% in adults. The growing popularity of yoga makes it accessible to both practitioners and researchers alike. Researchers who have studied mindful forms of movement have been largely interested in how it can be used as an adjunct therapy to support mental and physical well-being. More recently, researchers have dived more deeply into the psychological processes that occur when individuals are moving mindfully.

Experiences During Mindful Movement

One of the questions of most interest to researchers is how being mindful while moving impacts the nature of the movement experience. When moving mindfully, individuals not only direct their attention to their present-moment experience but are also open and accepting of whatever emerges in that experience. Alternatively, when individuals engage in physical activity and are not being mindful they might be thinking about the past or the future, judging some aspect of their experience (e.g., pain, ability, performance), thinking about what they look like while exercising, contemplating their exercise goals, or listening to music. Researchers are interested in how being fully present in one's body while engaging in physical activity impacts one's experiences while moving. Two areas that have received recent attention are the degree of pleasure experienced and how one experiences or inhabits their body while moving. In the sections that follow, we will explore the research evidence that reveals the way mindfulness can shape the movement experience.

Affective and Emotional Experiences

Some of the most compelling evidence of the benefits of mindful movement is that people simply feel good doing it. This is often captured by measuring participants' affect or distinct emotional states (e.g., content, sad, irritated) either while they are participating in physical activity or retrospectively (i.e., recalling it after the fact). Affect refers to how people feel (e.g., good or bad; Ekkekakis & Petruzzello, 2000). It is the experiential piece of emotions such as anxiety or joy, but does not have to be derived from a specific emotion per se. In several studies, researchers have observed a relationship between mindful states and affective responses during physical activity. In a study that used experience sampling at random times throughout the day, college students' moving, standing, and sitting behaviors as well as their negative affect (i.e., stress, anxiety, and generally feeling bad) were assessed in the moment over a fourteen day period (Yang & Conroy, 2018). Students experienced less negative affect during movement-based activities than when sitting or standing. Negative affect was also lower when participants were more mindful than usual while engaging in physical activity. Thus, a synergistic effect was observed where being mindful amplified the positive influence of physical activity on negative affect. In a different approach, Mackenzie et al. (2014) assessed participants' focus of attention and affect across an 80-minute yoga class. Throughout the yoga class, simultaneous increases were observed for both an associative focus of attention (i.e., focus on the present moment) and positive affect. Thus, the more focused they were on moving in the present moment, the better they felt. Finally, in a study testing the effects of mindful walking, participants' state mindfulness and positive and negative emotions were assessed multiple times a day using experience sampling methodology (Gotink et al., 2016). Results showed that state mindfulness and emotions experienced during mindful walking prospectively enhanced each other in an upward spiral. That is, state mindfulness in one moment positively predicted positive emotions in the next moment sampled. Similarly, positive emotions positively predicted state mindfulness in the next moment sampled. Therefore, the more

participants focused their attention on the here and now throughout the study, the more pleasant their experience became. Overall, being attentive to the experience of moving in a nonjudgmental and accepting way appears to support positive affective and emotional experiences.

Learning Exercise Two

Recall a time when you were engaging in physical activity in a purely joyful, playful, and just plain fun way. Some of you might have to think way back to when you were a kid at the playground. Close your eyes. Try to recall everything you remember about that experience. What did you see, hear, smell, taste and feel? How did the experience make you feel? Write down everything you can remember. What aspects of mindfulness were a part of that experience? How can you recreate those experiences now?

Embodied Experiences

Mindfulness also plays a key role in how we experience living in our bodies, referred to as embodiment (Piran & Teall, 2012). Although embodiment can be defined in different ways, broadly speaking, it refers to our connection with our bodies. Piran (2016) further discusses how experiences of embodiment can be positive or negative along five different dimensions including body connection and comfort, agency and functionality, attuned self-care, experience and expression of bodily desire, and inhabiting the body as a subjective site. Overall, positive embodiment is described as “positive body connection and comfort, embodied agency and passion, and attuned self-care,” whereas negative embodiment is defined as “disrupted body connection and discomfort, restricted agency and passion, and self-neglect or harm” (Piran, 2016, p. 47). On the one hand, Piran discusses in her developmental theory of embodiment (DTE) how multiple factors contribute to negative embodiment, such as the way many cultures emphasize the importance of women’s physical attractiveness and evaluate them based on often unrealistic societal standards. This objectification of women’s bodies can cause them to dissociate from their physical experiences. On the other hand, she outlines the factors that support positive embodiment, which include immersing oneself in joyful physical activities. Full immersion in the act of moving one’s body is consistent with the way that mindful movement is described. Unsurprisingly, engaging in mindful forms of movement is associated with positive experiences of embodiment. In the next two sections, we will explore some of the research evidence connecting mindfulness to the dimensions of embodiment that have received more research attention: body connection and comfort and inhabiting the body as a subjective site.

Body Connection and Comfort. Qualitative investigations of individuals who participate in various forms of mindful movement highlight how the movement helps them feel more connected to their body or greater integration between mind and body. Many such studies have been conducted with yoga participants across different age groups and special populations (e.g., cancer survivors; those with chronic pain). These participants talk about how yoga increases their awareness of thoughts, feelings, emotions, and sensations (e.g., Cramer et al., 2013; Goncalves et al., 2016). With this greater awareness, they are able to be more present and decide how best to respond. For example, Dittman and Freedman (2009) interviewed women ages 22 to 72 years who practice yoga regularly. They reported an increased awareness and connection with their body due to practicing yoga. This connection helped them feel more grounded or present in their bodies and they were better able to listen and respond to their bodies’ needs. Although it may seem simple, responding to one’s needs like resting when tired or drinking water when thirsty is not as natural when experiencing disconnection from one’s body.

Furthermore, they liked, respected, and appreciated their bodies more which is consistent with quantitative studies linking yoga participation to higher body appreciation (Cox et al., 2019; Halliwell et al., 2019). That is, during the course of yoga participation over a period of weeks, increases in the degree of love, respect, and appreciation women have for their bodies have been observed. The breath is a common focus of attention across different forms of mindful movement (e.g., yoga, tai chi, qigong) and may serve as one vehicle that fosters a close connection and comfort with one's body.

Other types of physical activity such as dance may also provide an opportunity to feel connected and comfortable in one's body. However, this is highly dependent on the type of dance. Tiggemann et al. (2014) proposed that belly dance was an embodying activity that promotes connection with one's body due to a focus on breathing and the abdominal muscles as well as concentration and emphasis on connecting to the body. To test this proposition, they compared belly dancers to those who had never participated in belly dance on embodiment-related variables. Results showed that belly dancers had significantly higher levels of body appreciation relative to the comparison group. However, it is equally plausible that individuals who are already more comfortable in their bodies choose to participate in belly dancing. Stronger evidence comes from studies that have used dance or dance therapy as an intervention. For example, in one study, researchers interviewed male and female teenagers who participated in a dance movement psychotherapy session which is focused on feeling the body move (Grogan et al., 2014). The results revealed that participants felt greater body acceptance, less self-consciousness and more connected to their bodies after the dance therapy. No doubt moving in a mindful way, whether it be through yoga, dance, or sport, provides numerous opportunities to become both aware of sensations in the body that may be reflective of physiological and emotional states and accepting of what one finds, thus contributing to body connection and comfort.



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Inhabiting the Body as a Subjective Site. Inhabiting one's body subjectively means experiencing and interacting with the world from a first-person, internal perspective (Piran, 2016). It also refers to resisting the pressure to view one's body from a third-person perspective, as an object to be judged for its external appearance. This third-person perspective is incompatible with the experience of being

mindful while moving. For example, imagine dancing or doing tai-chi in front of mirrors. Perhaps you are completely immersed in the activity, bringing your attention fully to the feeling of the movement and sensation in your body. Then, you become distracted by your image in the mirror and before you know it, you are looking at yourself from an observer perspective. And because we are social creatures, seeing your own reflection likely turned into an evaluation of the image you perceived without you even realizing it. That doesn't sound very mindful does it? In an instant, you are no longer aware of your own present-moment sensations as your attention is pulled out of experiencing your body and into evaluating an external image of yourself. The phrase "dance like nobody's watching" sums up the value of resisting an external perspective and the joy that can arise from fully inhabiting your body.

We do not even need mirrors to prompt us to think about the way we appear to others from an observer perspective. Body surveillance is something people do all the time, some more than others. It refers to thinking about what you look like from a third-person perspective and it undermines inhabiting your body subjectively (Fredrickson & Roberts, 1997). Mindful forms of movement may contribute to resisting this objectifying, third-person perspective by continually drawing attention to internal experiences of physical sensations, thoughts, and emotions. At the very core of mindful movement is inhabiting the body subjectively, from an internal perspective. Research evidence shows that through yoga participation, women start to value and appreciate the functionality of their bodies more and an emphasis on outward physical appearance can decline (Dittman & Freedman, 2009). This reflects a shift from an objectifying to embodied perspective. In support of such a shift, body surveillance has been found to decline over the course of participation in a yoga class over time (Cox et al., 2017; 2019; Impett et al., 2006). Further, an explanation for these shifts was documented in a study showing that when participants were more mindful during yoga class, they engaged in less body surveillance (Cox et al., 2017). And remember those belly dancers (Tiggemann et al., 2014)? They too reported significantly lower body surveillance compared to those who had not belly danced. Thus, being mindful while moving appears incompatible with an objectifying perspective of the self and may help promote inhabiting the body subjectively over time. Overall, engaging in mindful movement is associated with pleasant physical activity experiences and a positive state of embodiment.

Learning Exercise Three

Recall a time when you felt quite self-conscious engaging in physical activity. Maybe you were looking in the mirror frequently or thinking about the other people around you observing you. What did that experience feel like? What thoughts were going through your head? What do you notice about the way it feels to exercise or move when you are thinking about your outward appearance or others judging you? Finally, how could you bring your attention inward to the experience and sensations of moving your body?

Outcomes of Mindful Movement

Mindful forms of movement or physical activity have also been linked to a number of mental and physical health benefits as well as other healthy behaviors. We know that mindful movement, like physical activity more generally, is associated with a wide range of physical health outcomes. In line with an exercise psychology perspective, here we will discuss some of the psychological and behavioral outcomes associated with mindful movement.

Trait Mindfulness

At a very basic level, participating in mindful movement can be an effective strategy for

increasing overall levels of trait mindfulness. Presumably, any activity in which an individual is being mindful is enhancing one's ability to be mindful in general. Kiken and colleagues (2015) provided evidence of this from participants in an 8-week Mindfulness-Based Stress Reduction Program (MBSR; Kabat-Zinn, 1990). Each week of the program, they assessed participants' levels of state mindfulness during a meditation exercise. What they found was that growth in state mindfulness over the eight weeks of the program contributed to growth in trait mindfulness. Similarly, engaging in various forms of mindful movement over time has been associated with increases in trait mindfulness. In one study of college students, increases in trait mindfulness were observed over the course of 16 weeks of yoga participation (Cox & McMahon, 2019). In another study, college students participated in taijiquan, a martial art that originated in China, twice a week for 15 weeks (Caldwell et al., 2011). The students who participated in taijiquan classes, increased significantly in trait mindfulness whereas those in a comparison class that involved similar levels of physical activity did not. The physical sensations that we experience while moving may provide a more tangible, dynamic, and interesting focus of attention relative to sedentary or breath-based forms of mindfulness practice. Mindful movement has been shown to be more effective than seated mindfulness practices for supporting the development of trait mindfulness (Carmody & Baer, 2008). Thus, mindful movement may not only provide a more accessible and attractive entry point for engaging in mindfulness practices, but may even be more effective than seated practices for developing trait mindfulness.

Mental Health

The cultivation of mindfulness while moving may lead to better mental health benefits than either seated forms of mindfulness (Hunt et al., 2018) or physical activity that is not mindful (Asztalos et al., 2012). The positive link between physical activity and mental health indicators is well-established (e.g., McDowell et al., 2019; Rebar et al., 2015); however, combined with acceptance and detachment from one's thoughts, emotions, and other experiences, mindful physical activity may enhance the positive mental health benefits of physical activity alone. There is no shortage of empirical evidence linking mindful forms of movement such as tai chi, yoga, and mindful walking to positive mental health or psychological well-being. For example, older adults in a 6-month tai chi program experienced increases in positive affect and well-being and decreases in negative affect, depression, and psychological distress (Li et al., 2001). In another study, adults with high psychological distress demonstrated large reductions in stress over the course of a 4-week mindful walking program (Teut et al., 2013). And in yet a different form of mindful movement, yoga participation, has consistently been linked to the reduction of physiological markers of stress (e.g., cortisol; Pascoe et al., 2017) and overall psychological well-being in youth (Noggle et al., 2012) and adults (Hartfiel et al., 2011) alike. Thus, there is robust support for the psychological benefit of engaging in a range of mindful movement at all ages.

Mindful movement may also be more effective for supporting positive mental health compared to various seated forms of mindfulness practice. MBSR (Kabat-Zinn, 1990) is one of the most popular and widely researched mindfulness programs. It includes both seated (e.g., meditation) and movement-based forms of mindfulness like yoga and walking and is consistently linked to reductions in stress and other indicators of psychological well-being (e.g., Shearer et al., 2015). However, given the known psychological benefits of mindfulness in general, it is unclear to what degree mindful movement may be responsible for the positive outcomes associated with MBSR programs. In one study hoping to disentangle the various elements of MBSR, college students were randomly assigned to one of five conditions: a) mindfulness and meditation alone, b) yoga alone, c) yoga with mindfulness and meditation training, d) study break with snacks and therapy dog, or e) no treatment control for four weeks (Hunt et al., 2018). At the end of the intervention, only the yoga alone and yoga plus mindfulness/meditation groups had significantly lower anxiety and negative affect compared to the no treatment control group. The results of this study provide some initial evidence that there may be a

synergistic effect when movement is combined with mindfulness. Moving mindfully could provide an optimal combination for supporting positive mental health. However, much more research is needed that provides direct comparisons among different types of physical activities, seated mindfulness practices, and mindful movement practices.

Healthy Behaviors

Other potential beneficial outcomes of engaging in mindful movement include health behaviors. As with other areas of research on mindful movement, most of this work has been conducted on yoga participants. Individuals who participate in yoga on a regular basis report that it has promoted healthy habits in the areas of eating, physical activity, sleep, and engaging in relaxation (e.g., Watts et al., 2018). For example, in one study, young adults reported that their yoga practice motivated them to eat healthier and be more mindful of what they are eating; they also reported increased healthier cravings and less emotional eating (Watts et al., 2018). Furthermore, yoga motivated them to be more active outside of yoga and provided them with the skills to try other forms of physical activity. Other studies have found that yoga participants are able to use what they learn in yoga to engage in stress reduction strategies outside of yoga and better respond to their needs with self-care (Galentino et al., 2012; Goncalves, et al., 2016; Rhodes, 2015). One of the most frequent examples yoga participants give is using the breathwork they learn in yoga to respond to stressful situations in their daily lives.

The relationship between mindful movement and healthy behaviors may be due to increases in attunement with the self that occur when being mindful. Through increased awareness of what the mind and body feel like, individuals can better discern how best to respond to and take care of one's self. This attuned self-care is also one of Piran's (2016) five dimensions of embodiment. In a study of adults with chronic neck pain, participants talked about how increased body awareness from yoga helped them better see the connection between their behaviors and their well-being (Cramer et al., 2013). Therefore, mindful movement activities may support health and well-being directly as well as indirectly by supporting additional healthy behaviors.

Is Mindful Movement Motivating?

Although mindful movement is not new, we are just now documenting the many benefits of the practice of mindful movement related to physical activity motivation and behavior. As research is catching up with the practice, we are seeing more and more evidence to support how mindful movement can play a role in motivational processes. As a research topic, mindfulness and motivation is in its infancy. However, there is at least one theoretical model that incorporated mindfulness within a broader description of motivation and well-being more than forty years ago. Self-determination theory (SDT; Ryan & Deci, 2017) is one of the most widely used theoretical frameworks on motivation and well-being across many disciplines and domains. SDT is referred to as a macro-theory, which means that it is a framework that is intended to be applied across all people and domains to holistically describe, explain, and make predictions about human well-being. Below is an overview of key aspects of SDT that are most relevant to mindfulness.

Key Details of Self-Determination Theory Explained

To understand how mindfulness might play a role in motivational processes, it is helpful to understand how motivation is conceptualized within SDT (see Ryan & Deci, 2017; Chapter 3, Quested et al., 2021). Motivation is described as multi-dimensional, reflecting the different ways we regulate our behavior. There are different types of motivation that represent different reasons why people engage in a particular behavior. The focus is on the underlying reasons that energize or regulate behavior and these reasons are presented as falling along a continuum ranging from volitional or autonomous reasons

to externally controlling reasons. Amotivation reflects lacking a reason for doing an activity and represents an absence of autonomy. Theoretically, individuals who are amotivated may be acting rather mindlessly given the unintentional nature of their behavior. On the other hand, intrinsic motivation represents the highest degree of autonomy. Intrinsic motivation represents engaging in a behavior, such as exercise, for the rewards gained solely from the act of exercising. These rewards that are inherent to the activity itself can include enjoyment, satisfaction, and challenge, among others. This type of motivation represents the purest form of motivation because it is completely self-regulated (autonomous) and derived from the activity itself; for example, “I exercise because I enjoy the feeling of the movement”. Intrinsic motivation naturally aligns with a mindful state as one is paying attention to the experience itself.

In the middle of the continuum, there are four types of motivation regulations that represent engaging in a behavior for reasons that emanate from sources external to the activity. Each of these types of extrinsic motivation represent progressively lower degrees of autonomy. The external and controlling nature of these types of motivation reflect potential barriers to being present and accepting of one’s experience. The most autonomous of the extrinsic regulations is integrated regulation, which represents an integration of the activity as congruent with one’s sense of self or identity; “I exercise because I identify as a healthy and active person”. Next is identified regulation, which is still autonomous because it represents engaging in a behavior because it is of personal value and importance; “I value the benefits of exercise”. A somewhat more external and more controlling regulation is introjected regulation, which reflects internalized rewards, pressure or guilt; “I exercise because I feel bad about myself if I don’t”. Finally, the most controlling form of motivation, external regulation, represents external rewards or punishments; “I exercise because my physician tells me I have to”. The distinctions between the different types of behavioral regulations highlight the varying degrees of autonomy and external control. The process by which a behavior can become internalized or integrated within an individual’s sense of self and consistent with one’s values is where mindfulness may play a role in motivation.

There is substantial support linking autonomous motivation, and intrinsic motivation in particular, with long-term physical activity behavior (Teixeira et al., 2012). Teixeira et al. conducted a systematic review analyzing the results of 66 studies with a consistent trend across studies that supported the important theoretical connection between intrinsic motivation and sustained physical activity behavior. What this evidence shows is that the most effective and consistent ways to sustain physical activity behavior are to internalize the behavior to be consistent with one’s sense of self and one’s values and to fully enjoy the experience of being physically active. Conceptually, such experiences are consistent with being mindful. SDT outlines that there are ways to support the internalization process to shift more controlling regulations to become more autonomous. A vast amount of research has addressed the role that social and contextual factors (e.g., coaches, exercise instructors) play in supporting or undermining autonomous regulations, with an emphasis on ways that basic psychological needs are fulfilled. Feeling competent, autonomous, and socially related are core psychological needs that lead to optimal psychological functioning and serve as a primary mediator between social influences and autonomous motivation and psychological well-being more broadly (Ryan & Deci, 2017). We know quite a bit about the types of behaviors of significant others that support or undermine psychological needs and impact physical activity motivation. However, there are other ways that psychological needs, and autonomous motivation are fulfilled. Mindfulness is an intra-individual factor that may provide a different type of pathway to psychological need fulfillment.

Theoretical Explanation for the Role of Mindfulness

While there are important inter-personal influences such as the exercise instructor and environment on these motivational processes, there are also intra-personal factors involved. Intra-

personal factors are those that are within the individual. Mindfulness represents an understudied, but conceptually supported intra-personal process to consider in physical activity motivation (Brown & Ryan, 2003). In 1980, Deci and Ryan described how mindfulness may play a key role in the internalization process to support autonomous motivation. Let's start with what it looks like to be *mindless* from a motivation perspective. Mindlessness represents a mode of operating in reactive, compulsive, and/or habitual patterns. This means that there is no space, intention, or thought behind the action, hallmarks of amotivation and a state with potentially negative consequences. A few examples demonstrate how an absence of mindfulness is reflected in common behavior patterns. For example, experiencing a state of heightened stress may fuel a habit of scrolling distractedly through one's phone rather than following through with a planned workout. Or feeling shame when one evaluates the shape of their body in the mirror may similarly fuel a cycle of overeating rather than showing up to the gym. These patterns of behavior demonstrate a submission to negative psychological and emotional states and may interrupt acting from one's core values and needs. Mindful awareness may defend against defensive or ego-involved states, which are more aligned with controlling forms of motivation that are regulated by short-term internal or external rewards and punishments (Ryan & Deci, 2017).

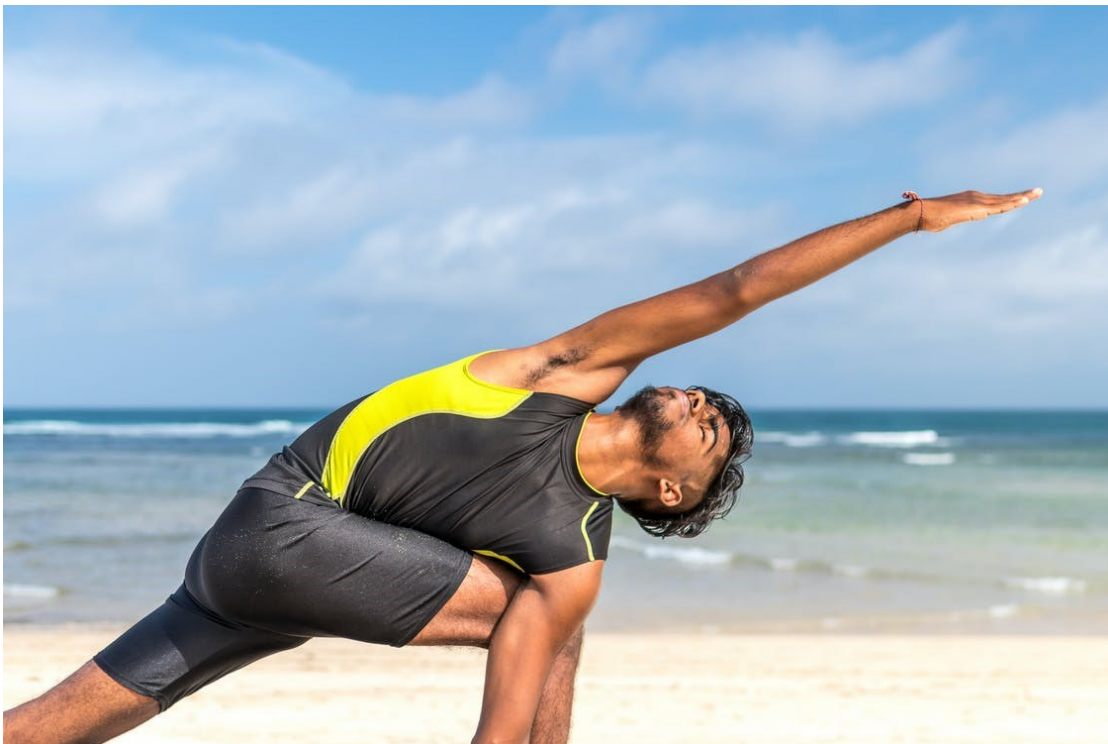


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When acting mindlessly (e.g., compulsive, reactive), there is a lack of space between stimulus and response (e.g., feel bad—skip workout) and no conscious thought for long term consequences. In this state individuals lack intention and connection with values and goals, which are more representative of amotivation or low autonomy (Deci et al., 2015). We have all been there before and it is frustrating to know you should exercise, you want to exercise regularly, but you just can't break the pattern of inactivity. The result is that we tend to feel bad about ourselves and we don't reap the mental or physical benefits of exercising. The desires, goals, and value of exercising may not be aligned with the behavioral patterns. This is the place where being more mindful may be helpful for facilitating more

autonomous motivation.

Deci and Ryan (1980) argued that the qualities of mindfulness create the psychological space for individuals to make decisions that are more in line with their values, needs, and interests. Mindfulness encompasses qualities of open, attentive awareness of thoughts and feelings (both mental and physical) providing an important first step towards aligning goals, values, and needs with behavior. Attentiveness to one's needs (i.e., competence, autonomy, relatedness), especially when done with openness, acceptance, and nonjudgment, provides the space to identify, evaluate, and select behavior options more autonomously. Nonjudgmental awareness can, for example, open the door to constructive feedback to inform competence (ability) perceptions and avoid eliciting defensiveness, suppression, or avoidance. Mindfulness qualities can also help to regulate emotional responses by diffusing the reactivity and compulsiveness that leads to or is fueled by more controlling forms of motivation regulation. In this way, mindfulness creates a pause, a space within which to be more deliberate. The result of this psychological space is that behavioral choices can be made with more clarity and over time can facilitate the internalization process and lead to autonomous motivation and long-term behavior.

Moving Beyond Theory: What Does the Research Show?

The conceptual description of the role of mindfulness in motivational processes is clearly outlined within the assumptions of SDT. Being mindful should facilitate the three core psychological needs which will then support autonomous motivation and physical activity behavior. If you go through your day attending to present-moment thoughts and sensations with an open attitude and allow each experience to emerge, you are more likely to feel in tune with your needs and volitional in what you are doing. This has been demonstrated in a daily diary study showing that those with higher trait mindfulness tend to have more experiences of state mindfulness during daily life and that these individuals report positive affect and more autonomous regulation for their activities (Brown & Ryan, 2003). A key finding of this study was that the state, or moment to moment, experiences of mindfulness had a stronger effect on affect and autonomous motivation and were independent of trait mindfulness. That is, having trait mindfulness tends to lead to more state mindfulness experiences, but trait mindfulness was not necessary for individuals to have state mindfulness experiences. This work provides foundational evidence demonstrating the distinct role of state experiences of mindfulness for predicting more positive affect and more autonomous regulation of behavior.

Research evidence illustrates the relationships of both trait and state mindfulness with psychological need satisfaction and autonomous motivation for exercise. Trait mindfulness has been positively associated with autonomous motivation for physical activity and negatively associated with controlling forms of motivation for physical activity (Kang et al., 2017; Ruffault et al., 2016). These findings have been based on cross-sectional research and have been of small magnitude. There is some evidence that having high trait mindfulness can strengthen the relationship between intrinsic motivation and physical activity behavior (Ruffault et al., 2016). This supports the conceptualization of mindfulness as a facilitator of internalization processes and alignment of values with behaviors. However, there is very limited exploration into these processes and trait mindfulness appears to have a relatively small impact on behavior.

An alternative approach, drawing from Brown and Ryan's (2003) work, is to focus on how the specific experiences of being mindful plays a role in physical activity motivation and behavior. If an individual experiences movement mindfully (i.e., state mindfulness), then they may feel more connected to their body and the experience of moving which may provide the opportunity to feel more empowered and satisfied with the movement itself. Conceptually, it seems then that state mindfulness is aligned with intrinsic motivation which is derived from the very experience of moving.

Greater awareness of one's feelings and sensations during movement may increase one's ability to meet their needs for competence, autonomy, and relatedness, thus facilitating the internalization

process toward autonomous regulation. Mindfulness allows attention without judgment that can serve to connect one to their physical experience, which should raise perceptions of competence and foster their sense of autonomy. Imagine a high-intensity spin class where legs are burning, sweat dripping, and lungs screaming. Paying attention to these sensations without judgement allows one to better respond with what supports one's goals. For the hardcore athlete, these cues align with fitness goals and give biofeedback about performance that guides effort. For someone just starting their fitness journey, these sensations may be an indicator of overexertion which may not serve the longer-term goal of sticking with a new fitness routine. Mindful attention will aid the athlete to push themselves while directing the inexperienced spinner to pace themselves so they can finish the session and return for another day. When an exercise session is uncomfortable, a mindful approach can allow an individual to view behavioral options with more clarity and be more volitional about how to proceed in a way that also supports feelings of autonomy. There is some evidence to support this pathway. We examined state mindfulness, psychological needs (perceived competence and autonomy), and autonomous motivation for physical activity longitudinally across a 16-week yoga class (Cox, Ullrich-French, & Austin, 2020). We found that trait mindfulness predicted state mindfulness, but not psychological needs or motivation. Participants who started the yoga class with higher state mindfulness and those that increased in their experiences of state mindfulness across the 16 weeks reported increases in perceived competence and autonomy. In addition, growth in state mindfulness directly and indirectly (through need satisfaction) predicted autonomous motivation for physical activity. This study is the first to test a SDT-based process model of the role of trait and state mindfulness in physical activity motivation. This evidence supports the conceptual links laid out about how mindful movement can serve to facilitate autonomous motivation and suggests that indeed, mindful movement can be motivating.

Learning Exercise Four

You are in a high-intensity exercise class that is pushing you to your limit. You have choices. If you value and are motivated to push yourself then your response might be “bring it on”. If you value overall wellness, and want to survive to return to another class, your response might be “how can I modify this so I can complete the class?”. What are the ways that you might respond in this moment (i.e., emotionally and behaviorally)? Think about what is driving that response. Does the response align with your motivation, goals, and values? Does your response help you feel more competent and autonomous?

Other Important Motivational Factors: How Pleasant is Moving?

Strategies for increasing motivation to exercise need to consider the vital role of how people feel while exercising. The degree to which exercise is experienced as pleasant in the moment, referred to as core affect, is a good predictor of future behavior (Brand & Ekkekakis, 2018; see also Chapter 4, Brand & Ekkekakis, 2021). We are more motivated to repeat pleasant rather than unpleasant activities, right? The extent to which exercise has pleasant feelings associated with it, the greater the likelihood of choosing to exercise again in the future and making that choice for intrinsic reasons. State mindfulness has been found to positively associate with positive affect across a range of daily activities (Brown & Ryan, 2003). That is, generally things are more pleasant when engaging in them mindfully. Being mindful may allow for a more balanced emotional state, which is a generally pleasant psychological state of equanimity, peacefulness, or contentedness. Someone completing a challenging exercise mindfully may be able to hold the negative physiological sensations in balance with feelings of satisfaction to maintain an adaptive psychological state.

In order to develop useful exercise interventions, a growing trend is to focus on how to make exercise experiences more pleasant. Many people exercise with distraction, such as listening to music, as a coping strategy to “get through it” or so they “don’t feel the pain”. Dissociative strategies, such as listening to music during exercise have been touted as a way to make exercise more pleasant. Although music is an effective strategy for making individual exercise sessions more pleasant, we have some evidence to suggest that intentionally manipulating mindfulness while exercising can lead to similarly pleasant exercise experiences as listening to music while exercising (Cox, Ullrich-French, Hargreaves, & McMahon, 2020). This suggests that paying attention to the physical experience of moving your body can be pleasant and comparable to listening to music. Although dissociation may serve a purpose of reducing awareness of discomfort and is motivating for many people, this can lead to a dissociation with the bodily experience of moving. While a distracted experience tends to be enjoyable, it should be more difficult to develop a strong sense of competence when one isn’t fully experiencing the movement and activity itself. Thus, a dissociative focus during exercise is less likely to lead to the fulfillment of basic psychological needs and the long-term adherence through autonomous motivation. We have a lot to learn still about how to effectively apply mindfulness strategies to lead to optimal exercise experiences.

Learning Exercise Five

When you exercise to music it makes the time go by, it can be motivating and fun. Think about your experiences exercising with and without music. When you finish a workout while listening to music, how much of the experience do you remember? How connected do you feel with the sensations in your body? Your feelings of competence or achievement? Now, what about when you don’t listen to music? How does the experience differ?

Moving from Motivation to Behavior: Mindfulness and Physical Activity Behavior

As discussed previously, mindful forms of movement have been linked to a variety of health behaviors. Similarly, trait mindfulness and physical activity behavior have been connected in several different ways. Those who self-report more physical activity also report higher levels of trait mindfulness (Gilbert & Waltz, 2010; Kangasniemi et al., 2014) and are more likely to engage in mindfulness practices (Strowger et al., 2018). The type of activity may be important though, as time spent doing intentionally mindful activities such as yoga are associated with higher trait mindfulness while time spent doing cardio-based exercise has been associated with lower trait mindfulness (Martin et al., 2013). This indicates that qualities of the physical activity are relevant to the role of mindfulness. It could be either that those who are generally more mindful gravitate towards mindful movement (e.g., yoga) or that the mindful movement develops the tendency to be mindful. There is not enough information to know if there is one direction of influence, although both possibilities are likely working together to mutually reinforce one another.

An added complication to the puzzle of understanding the role of mindfulness in physical activity behavior is that although there is a consistent positive association between mindfulness and self-reported physical activity, this is not the case when physical activity is assessed more objectively (e.g., accelerometer based assessment of movement; Kang et al., 2017; Kangasniemi et al., 2015). In addition, when mindfulness is context specific, or applied specifically to physical activity, it is more strongly and consistently associated with physical activity compared to trait mindfulness. So, the context matters in several ways. One can be mindful generally, but not in a specific physical activity experience. For example, someone who generally is mindful can have a bad day and be distracted during a workout.

Or, someone who isn't generally mindful can show a special interest in a physical activity and have more focus, attention, and connection while doing that activity than in other areas of their life. It is difficult to predict and understand all the factors that influence behavioral choices, but we do know that mindfulness is related to many of those factors including more autonomous motivation, positive affect, and other physical activity related perceptions (e.g., psychological needs). The relationship between mindfulness and physical activity behavior is likely indirect and the more we can uncover about the processes that might link the two, the better we can understand the role of mindfulness in motivation.

Mindfulness as an Intervention to Increase Physical Activity

Mindfulness interventions often include acceptance and mindfulness-based stress reduction approaches that teach and then facilitate the practice of mindfulness strategies. Acceptance, compassion, and mindfulness approaches share the promotion of awareness and nonjudgement toward the self. Such approaches have led to increases in physical activity (e.g., Butryn et al., 2011; Palmeira et al., 2017). In one intervention, college age women were assigned to either an educational condition or an Acceptance and Commitment Therapy (ACT) condition aimed to increase physical activity (Butryn et al., 2011). The educational condition provided information about the benefits of physical activity and ways to safely participate in physical activity. Participants in the ACT condition were taught how to defuse or separate from distressing thoughts about exercise and identify and strengthen values around exercise. Post-intervention and at a three-week follow-up, participants in the ACT condition participated in more physical activity compared to participants in the education condition. This study shows how developing mindfulness skills and using strategies to address intrinsic motivation (aligned with SDT) were effective at increasing physical activity behavior. Although this intervention targeted physical activity behavior and interventions were physical activity based in content, there was not an explicit movement component that was manipulated. Applications of mindfulness in school interventions also show that physical activity can be increased in children (Salmoirago-Blotcher et al., 2018). However, children who started this intervention with higher levels of activity showed a stronger effect of the mindfulness training. Perhaps this means that having experience with physical activity primes individuals or allows them to more easily apply mindfulness in an adaptive way. In a randomized controlled trial with healthy adults that used physical activity as a comparison group, similar amounts of physical activity were found for the MBSR and aerobic exercise conditions (Meyer et al., 2018). This study concludes that the real benefit may be in combining MBSR with physical activity. There is still much to be learned about how to most effectively incorporate mindfulness into physical activity interventions.

Conclusion

The previous sections have demonstrated how the qualities of mindfulness are relevant to key aspects of the physical activity experience as well as important health-related outcomes. Generally, when individuals are more mindfully engaged in the act of moving, the experience is more pleasant, they inhabit their bodies more fully, and have a more positive connection to their body. More broadly, engaging in mindful movement is linked to better mental health, health behaviors, and the development of trait mindfulness. Cultivating the ability to be mindful also appears to have important implications for physical activity motivation. Specifically, those who are generally more mindful or experience more mindful states during physical activity report greater autonomous physical activity motivation.

Physical activity may provide an optimal context for practicing mindfulness skills and experiencing the benefits of being mindful. Engaging in all types of movement provides a sensory activity with clear targets of focus (e.g., breath, physical sensations) as well as opportunities to resist self-judgment (e.g., body image) and thus may be an ideal forum for teaching mindfulness skills (Segal et al., 2002) or maintaining mindfulness skills previously taught (Gotink et al., 2016). Thus, there are a

variety of potential practical implications from this work that could inform future interventions targeting physical activity motivation, body image, mental health, or well-being more generally. This area of research within exercise psychology is still quite new and will benefit from continuing to firmly ground investigations in theory, using appropriate control or comparisons groups in experimental designs, and paying close attention to the way that mindfulness is defined and assessed at the state or trait level. So while there is great promise in harnessing the potential for mindfulness to support adaptive physical activity experiences and relevant outcomes, we must move forward carefully and in some cases temper the excitement many of us hold for the promise of mindfulness by acknowledging our own biases. This greater awareness will allow us to move forward with more clarity as we continue to study the intersections between mindfulness and movement.

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