The Impact of Dispositional Mindfulness (DM) on Sports Injury Recovery Time

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Abstract. This study analyzes the underlying relationship between dispositional mindfulness (DM) and sports injury recovery time. Sports injuries in high intensity sport are extremely detrimental to both the athlete's performance and psychological well-being. Consequently, the role of trainers/clinicians and rehabilitation programs are extremely important as they determine the injury recovery time of the athletes. Though physical therapies have shown to be effective in reducing the injury recovery time of an athlete, the addition of more psychological practices, such as that of DM, could furthermore decrease sports injury recovery time. Through analyzing studies regarding the relationship between DM and sports injury recovery time, it is shown that DM can positively affect those going through injuries and can assist them in getting back onto the pitch in a speedier manner.

Keywords: Dispositional Mindfulness; Injury Recovery Time; Sports.

1. Introduction

Athletes generally display negative psychological responses after receiving an injury due to the inability to play in the upcoming weeks or months. These include tension, stress, low self-esteem, anxiety, etc. (Smith, 1996). A U-shaped response is common for recovering athletes, displaying the effect of stress and anxiety on the mentality of an athlete. Negative responses predominated immediately after injury, alleviated as rehabilitation progressed, and becomes prominent again upon knowing that they can play the sport again (Morrey, 1999). Sociocultural influences can also induce fear and self-doubt during the rehabilitation process or after receiving clearance for play (Wiese-Bjornstal, 2010). Furthermore, negative psychological responses can also have compounding effects on injured athletes (Wiese-Bjornstal, 2010). All of the above can contribute to an athlete having to spend much more time recovering or even having a higher chance of reinjury.

Dispositional mindfulness (DM) is the act of being aware to our thoughts, feelings, and environment in the present moment with a nonjudgmental attitude (Brown & Ryan, 2003). Defined as a higher level of consciousness, DM consists of both awareness and attention (Deikman, 1982). Different but constantly intertwined, the two terms are respectively defined as "being sensitive to the bigger environment" and "focusing into a limited environment". Although awareness and attention are considered as natural and common characteristics of normal functioning, DM is considered to be an enhanced combination of both – receptive awareness and attention (Deikman, 1982; Martin, 1997).

DM can bring various benefits to the human mind and body, characterized by the clarity and vividness of experience, which can directly lead to well-being and happiness (Brown & Ryan, 2003). Therefore, DM should indirectly lead to the decrease in injury recovery time. However, previous studies provided results that are either too narrow or just simply inconclusive. To that cause, this paper is dedicated to build on existing work to demonstrate a positive relationship between DM and injury recovery time.

2. Fostering Positive Psychological Responses

As a way of neutralizing negative psychological responses that comes with an injury, motivation, confidence, low fear, and other positive psychological responses were associated with faster injury recovery time and a greater likelihood of returning to the pre-injury level of participation (Ardern et al., 2012). DM training in the west has become increasingly attractive in past few decades due to its helpful meditative practices and also long-lasting health benefits. A study done by Hölzel shows that practicing DM can help with reducing negative mental states and behaviors. Through achieving

attention regulation, body awareness, emotion regulation (reappraisal and extinction), and the change in perspective on the self, one can enter a state of mindful meditation that produces beneficial effects on a number of psychiatric, functional somatic, and stress-related symptoms (Hölzel et al., 2011). Furthermore, practicing DM can also promote positive reappraisal, which can enhance one's eudaimonic well-being (Garland et al., 2015). In short, positive reappraisal is a way of cognitive evaluation that can help mediate negative emotions. For example, stressful life events are often appraised as negative initially. However, with the influx of new information and variables, they are likely to be reappraised as valuable or beneficial, which would also exert an impact on emotion and personal well-being. This adaptive process in which negative psychological responses are transformed into positive ones was promoted by the practice of DM.

DM is shown to be effective in fostering optimism, thus leading to faster injury recover time. In a study where the relationship between positive psychological responses, namely dispositional optimism, and the recovery time from coronary artery bypass surgery was assessed, it was shown that optimism was strongly associated with a faster rate of physical recovery during the period of hospitalization and also a faster rate of return to normal life activities (Scheier et al.). During the first two weeks of their recovery, optimists significantly fewer days to regain normal walking abilities than pessimists F (1,44) = 6.67, $p < 0.02$ (Scheier et al., 1989). The more optimistic patients were also rated to have a more favorable physical recovery than the more pessimistic ones by the staff member F (1,44) = 6.25, $p < 0.02$ (Scheier et al., 1989). The optimists. Six months after the surgery, the patients were asked to indicate the extent to which their lives had returned to normal. The optimists were significantly more likely to have resumed intense physical exercises (F (1, 43) = 5.13, $p < 0.03$), returned to work on a full-time basis (F (1, 42) = 3.66, $p < 0.07$), and normalized their lives across a greater number of domains than pessimists (F (1, 42) = 6.92, $p < 0.02$) (Scheier et al., 1989).

Shown through Williams' study, dispositional optimism, a trait that's a byproduct of DM and reflects the extent to which people hold favorable outcomes for their future (Carver et al., 2010), was shown to have a significant effect during and after the recovery from ACL injures (Williams et al., 2020). During the study, two types of cognitive responses to stressors – primary and secondary appraisal – were analyzed in the context of dispositional optimism. It is suggested that optimists and pessimist tend to make similar primary appraisal, which is the assessment of a stressor's implication with personal health (Chang, 1998). However, they differ in secondary appraisal, which is the evaluation of potential methods to cope with the stressor, with optimists perceiving more control over the stressor (Chang, 1998). This sense of self-efficacy that comes with dispositional optimism can lead to the perception of future success, which can increase the perseverance towards the intended outcome (Bandura et al., 1999). Consequently, individuals with high levels of optimism and self-efficacy adopt more adaptive, problem-focused, and less avoidance coping strategies, which in turn could lead to higher treatment efficacy and adherence to the rehabilitation programs (Williams et al., 2020). During the study, it was determined that dispositional optimism is indeed positively correlated with secondary appraisal; Optimist had a stronger conviction that they are capable to recover quickly due to their positive expectancy of a successful outcome, which led to them attending more rehabilitation appointments within the first 6 months post-injury (Williams et al., 2020). Moreover, optimists were also shown to be less dependent on emotion-coping, as they focused more on injury recovery than avoidance due to their positive mindset (Williams et al., 2020). As dispositional optimism is shown to foster an athlete's motivation, self-confidence, and the expectancy of a positive outcome, they should have a faster rate of injury recovery.

Overall, it seems that there is a positive relationship between DM and injury recovery time due to the positive psychological responses that come with mindful meditations or other practices.

3. Setting Self-concordant Goals

Amari Rodgers, wide receiver for the Clemson Tiger's Football team, recovered from a torn ACL in only five months' time, a shocking one-month discrepancy between the assumed fastest recovery

time and 4 months between the average recovery time. How did he accomplish such a miraculous deed?

Self-concordance is defined as being true to one's personal values and goals, opposing external influences and pressures (Sheldon & Elliot, 1999). Thus, a self-concordant goal would be one that reflects an individual's authentic self, generating autonomous motivation for actions associated with it. Additionally, when people pursue goals that are concordant with their values and goals, they are much more likely to attain their goal (Koestner et al., 2002). Contrary to self-concordant goal setting, conditional goal setting, which is defined as the tendency to assume that some higher order goals are only achievable by attaining lower order goals (e.g., I can only be happy if I am financially secure), was shown to have an inverse relationship with DM and lead to depression and other negative psychological responses (Crane et al., 2010). In Rodgers' case, his speedy recovery was completely dependent on him setting self-concordant goals solely for wish of getting back on the football court asap. His goal was to be back on the field for the next season against Syracuse, and he managed to do so by not getting discouraged by the usual recovery time of ACL injuries and also setting self-concordant goals. Furthermore, this autotelic activity might have helped Rodgers enter the state of flow (Nakamura & Csikszentmihalyi, 2014), where he would operate at full capacity during rehabilitation exercises and achieve optimal results. As DM is defined as an enhanced form of self-awareness (Brown & Ryan, 2003), it may be particularly relevant to the selection of self-concordant goals since mindful people are constantly reflecting on their experience and emotions to gain a deeper understanding of their core values and interests (Brown et al., 2007).

Studies done by Smyth demonstrates that DM has a positive relationship with self-concordant goal setting, which also led to greater goal progress. In his first study where the relationship between DM and self-concordant goal setting was analyzed, it was shown that DM has a positive relationship with self-concordant goal setting ($t(773) = 3.16$, $p = 0.002$). Smyth's second study examined the indirect relationship between DM and goal progress through self-concordant goal setting. Although it was shown that DM had a significant effect on self-concordant goal setting, the indirect relationship with goal progress was inconclusive (Smyth et al., 2020). Nevertheless, during the third study, the same relationship was examined once again. It was discovered that DM was positively associated with self-concordant goal setting, ($a = 0.24$, $p < .01$, 95% CI [0.071, 0.399]), which in turn predicted goal progress ($b = 0.15$, $p < 0.005$, 95% CI [0.058, 0.234]) (Smyth et al., 2020). Consistent with the hypothesis, all three studies go to show that DM can lead to self-concordant goal setting and indirectly lead to better goal progress. There is also a positive relationship between the magnitude of the three variables: more DM leads to more self-concordance and therefore more goal progress (Smyth el al., 2020). Albeit small, the relationship between the three variables is still significant and validates the hypothesis.

4. Less Susceptible to Sociocultural Influences

One social expectation for high intensity athletes is being "tough" and playing through the pain. Studies have been done before questioning whether participation in sports while injured or experiencing other negative conditions is voluntary or forced through social pressures (Murphy & Waddington, 2007), such as organizational stress (Fletcher & Hanton, 2003) and raise issues (Mathias, 2005). In most cases, the latter was true. In order to continue playing despite suffering from injuries, athletes would often use drugs to mask their pain (Tricker, 2000), which can lead to the exacerbation of the current injury and other undesirable health conditions. These sociocultural influences also vary in terms of country, ethnicity, and traditions; some conventional training methods in certain regions of the world might be harsh and abusive towards the athlete, leading to both physical and mental harm. Liu Xiang, national hurdles hero from China, suffered from a terrible ACL injury during the 2008 Olympics due to inadequate recovery from prior injuries and having to continue training and racing due to sociocultural influences from the media and all his supporters. The hopes and dreams

of an entire nation can be dashed by an injury like this, which illustrates that an evaluation of sociocultural influences is central towards achieving better health for athletes.

One way that DM could ameliorate this issue is through preventing people from jumping on bandwagons. Bandwagons are defined as diffusion processes where individuals or groups adopt an idea due to the social pressures caused by the people that have already adopted it (Abrahamson & Rosenkopf, 1990), which directly relates to the sociocultural influences that are exerted onto athletes. Furthermore, bandwagons are also likely to exacerbate a compounding cycle, in which the increasing bandwagon pressure caused by the increased adopters can cause more people to jump on the bandwagon (Abrahamson & Rosenkopf, 1993).

Previously, decision-making researchers have focused on enhancing decision structures (information-processing mechanisms) to improve perception accuracy and deviate from the norms that are led by bandwagons (Sutcliffe, 1994; Thomas et al., 1993). Nonetheless, recent research suggests that this emphasis on improving decision structures may lead to the opposite of the intended results. It is likely that this widespread belief that enhancing decision structure can lead to a boosted perceptual accuracy can give decision makers more pressure (Fiol, 2003). The pressures for accuracy may lead to the threat-rigidity response (Staw, Sandelands, & Dutton, 1981) of oversimplifying interpretations and relying on cognitive shortcuts that restrict and constrain individual choice (Fiol & Huff, 1992), which leads to a lower perceptual accuracy.

Consequently, decision-maker mindfulness is put into light as means to moderate the potentially dysfunctional effect of formal decision structures and create greater discriminatory behavior in the face of bandwagons. Introduced as a state of alertness and lively consciousness that is manifested in active information processing, mindfulness is the ability to make distinctions and the awareness of multiple perspectives (Langer, 1989). Additionally, she stated in a more recent study that "a mindful approach to any activity has three characteristics: the continuous creation of new categories; openness to novel information; and an implicit awareness of more than one perspective" (Langer, 1997). Hence, mindful people would constantly scan data in the environment in order to create new categories and distinctions, leading to a more comprehensive view of themselves in any unique circumstance. And when it comes to decision making, a mindful person would make more discriminating choices that fits their qualities or motives better, rather than hopping on bandwagons and following the behavior of other people.

Thus, an athlete who practices DM, which was defined as a higher level of mindfulness that is incorporated into one's normal characteristics and functioning, are generally less susceptible to sociocultural influences/bandwagons, which would often lead to a faster injury recovery time.

5. Discussion

Shown through direct and indirect positive relationships, athletes with DM should be able to recovery faster than those who don't because of fostering positive psychological responses, setting self-concordant goals, and being less susceptible to sociocultural influences. Although minute in some scenarios, the practice of DM by injured athletes should be considered as essential by sports medics and trainers in order to minimize recovery time of an injured athlete.

Future research can extend from the results of this paper and focus on empirical studies that targets specific groups of injured athletes which incorporates DM training into their recovery workouts. Additionally, the various methods of fostering DM should also be considered, as the efficiency of which is extremely crucial in the context of sports rehabilitation. Thus, the application of DM in the sports industry can be achieve, which would lead to the general decrease of injury recovery time for athletes.

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