

# Helping athletes flourish using mindfulness and acceptance approaches – an introduction and mini review

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## Abstract

Mindfulness and acceptance are core concepts of the third wave of cognitive and behavioral psychotherapies. Their aim is not to overpower thoughts and emotions by suppression and using control techniques but to change the relationships with them. This article focuses on mindfulness- and acceptance-based approaches in sports. It briefly outlines these approaches and concludes that they are characterized by promoting three processes, which are present-moment attention, metacognitive awareness, and acceptance. Subsequently, the paper describes one approach particularly suitable for sports in detail – Acceptance and Commitment Therapy – with a special focus on how athletes can promote psychological flexibility and thrive in their effort to perform. This paper further addresses the question of whether mindfulness- and acceptance-based approaches are effective in sports by summarizing research from the past five years in the form of a mini-review. Findings from 19 reviewed studies, including 15 controlled or randomized controlled studies, suggest that different athlete populations can benefit from mindfulness- and acceptance-based approaches in terms of athletic performance and well-being. Positive effects on performance and well-being could be mediated by other psychological processes, e.g., enhanced emotion regulation. Further research is needed, especially regarding the mechanisms that impact mindfulness- and acceptance-based interventions in sports.

**Keywords:** Mindfulness, acceptance, psychological flexibility, emotion regulation, performance enhancement, psychological functioning

## Zusammenfassung

Achtsamkeit und Akzeptanz sind Kernkonzepte der dritten Welle der kognitiven Verhaltenstherapien. Ziel ist es nicht, Gedanken und Emotionen durch Kontrolltechniken zu unterdrücken, sondern die Beziehungen zu diesen Gedanken und Emotionen zu verändern. Dieser Artikel konzentriert sich auf achtsamkeits- und akzeptanzbasierte Ansätze im Sport. Er skizziert diese Ansätze und kommt zu dem Schluss, dass sie sich durch die Förderung von drei Prozessen auszeichnen, nämlich Aufmerksamkeit im gegenwärtigen Moment, meta-kognitive Bewusstheit und Akzeptanz. Anschliessend wird ein Ansatz im Detail beschrieben, der für den Einsatz im Sport besonders geeignet scheint – die Akzeptanz- und Commitment-Therapie – mit besonderem Augenmerk darauf, wie Athleten psychologische Flexibilität fördern und in ihrem Leistungsstreben gedeihen können. Indem die Forschung der letzten fünf Jahre in Form eines Mini-Reviews zusammengefasst wird, geht der Beitrag auf die Frage ein, ob achtsamkeits- und akzeptanzbasierte Ansätze im Sport wirksam sind. Die Ergebnisse von 19 Studien, darunter 15 kontrollierte oder randomisiert-kontrollierte Studien, deuten darauf hin, dass verschiedene Athletenpopulationen bezüglich sportlicher Leistung und Wohlbefinden von achtsamkeits- und akzeptanzbasierten Ansätzen profitieren können. Positive Effekte auf Leistung und Wohlbefinden könnten durch andere psychologische Prozesse mediiert werden, z.B. durch eine verbesserte Emotionsregulation. Weitere Forschung, insbesondere hinsichtlich der Mechanismen, die achtsamkeits- und akzeptanzbasierte Interventionen im Sport beeinflussen, ist notwendig.

**Schlüsselwörter:** Achtsamkeit, Akzeptanz, psychologische Flexibilität, Emotionsregulation, Leistungssteigerung, psychologische Funktionsweise

## Introduction

Like all human beings, athletes have specific psychological needs that must be met to develop and flourish [1,2]. Flexible and successful processes of fulfillment of these basic psychological needs foster psychological functioning and are a prerequisite for good mental health. Additionally, athletes must face numerous domain-specific demands and have to overcome various sport-specific challenges to satisfy their needs and foster their well-being. Traditionally, sport psychology consultants attempt to support athletes in this endeavor by introducing them to mental or psychological methods and strategies.

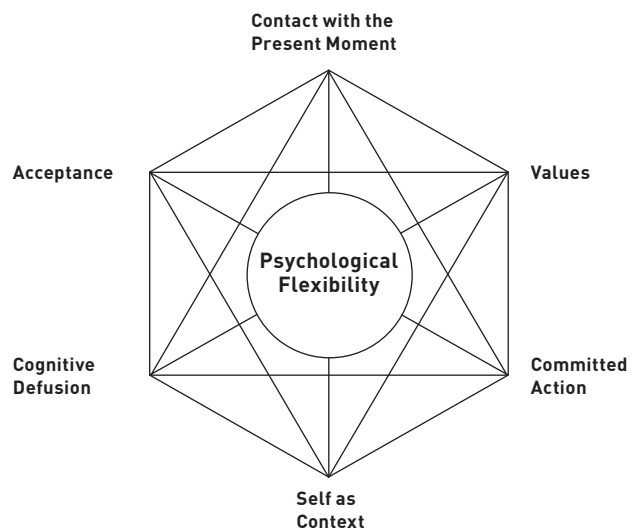
Until the noughties of this century, the most prominent approach used by sport psychologists was the traditional psychological skills approach, which has been predominantly influenced by the theoretical background of classic cognitive-behavioral therapy (CBT). Psychological skills training (PST) involves the learning and practice of techniques to self-regulate one's thinking as well as mentally accessible physiological states. In the last decade, new models and intervention approaches, such as systemic-solution-focused interventions (e.g. Ruchti and colleagues, [3]) and "third-wave methods" of CBT [4,5], have been increasingly employed in sport psychology services. Third-wave approaches are based on contextual concepts that focus more on the persons' relationship with thoughts and emotions than on their content and included concepts, such as mindfulness, acceptance, values, and commitment. The aims of this article are to introduce mindfulness and acceptance approaches with a focus on Acceptance and Commitment Therapy, to briefly discuss possible impact mechanisms and to review the most recent findings on the efficacy of mindfulness- and acceptance-based interventions in sports.

## What are mindfulness- and acceptance-based approaches?

The concept of mindfulness refers to a specific form of attention that directs one's own awareness to the present moment's experience with an open, accepting, non-judgemental, and non-reacting attitude [6]. Stemming from a Buddhist context, mindfulness is traditionally fostered by practice through formal or informal exercise [7]. Jon Kabat-Zinn introduced mindfulness in the Western medical system in the form of the Mindfulness Based Stress Reduction program (MBSR) [6]. His aim was to reduce suffering because he felt that hospitals are *dukha* (suffering) magnets: places that house suffering in the broadest sense [6]. In addition to MBSR, there are numerous other mindfulness- and acceptance-oriented models and intervention approaches, among other Mindfulness-Based Cognitive Therapy (MBCT) [8], and Acceptance and Commitment Therapy (ACT) [4]. Although all mindfulness- and acceptance-based approaches differ, they all promote three essential processes [7]: (a) purposeful present-moment awareness (e.g., continually returning attention to external or internal present-moment experience, such as a lit candle or the sensation of the breath), (b) metacognitive awareness (mindful self-focused attention of internal processes, thoughts, emotions, bodily sensations, images, and desires as observable events of the brain), and (c) acceptance of what is in the consciousness and what may arise or come into consciousness.

## The six core processes of Acceptance Commitment Therapy

Acceptance and Commitment Therapy, or ACT (pronounced as a word, not as letters), is recognized as an evidence-based practice in mental health treatment [9] and is, in our view, very well-suited for the application in sports because it covers all three above suggested mindfulness processes. A key assumption of ACT is that many psychological difficulties are due to a psychological inflexibility caused by six inhibiting processes. The aim of ACT is to tackle these six causes of inflexibility by addressing six interwoven change processes (Figure 1). These six processes are conceptualized as different lenses through which one can view patterns of behavior [10]. The processes act together to promote the development of a broader, more flexible schema of behavior, which helps people engage in actions that bring them closer to living a valued life (i.e., psychological flexibility, for a more comprehensive description see [4,5,10,11]). The focus on psychological flexibility as opposed to treating mental illness (although developed as a therapy) makes ACT especially valuable for use with athletes. The ability to act flexibly in an always changing and often unpredictable sport environment helps athletes achieve their potential. It serves too as primary prevention by teaching adaptive behaviors and pursuing a meaningful life. Additionally, because ACT is open to integrating other methods that have proven effective, it is well suited for use in sports, especially in combination with more traditional PST methods.



**Figure 1:** The ACT Hexaflex Model with the six ACT core processes.

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The *first* cause of psychological inflexibility is the avoidance of unwanted thoughts, emotions, and bodily sensations (experiential avoidance). Athletes tend to avoid feelings such as nervousness or anxiety or try to eliminate unpleasant thoughts, such as "I am not allowed to fail"; however, athletes sometimes experience what research on ironic mental processes shows [12]: the more one tries to suppress a thought, the more that very same thought is likely to surface. The ACT process to tackle this problem is *acceptance* of one's own thoughts, emotions, urges, and memories, regardless of whether they are pleasant or unpleasant. This involves ac-

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ceptance-oriented interventions aimed at helping athletes open up psychologically in a non-judgementally and non-avoiding way to difficult experiences, e.g., lack of self-confidence. By doing so, athletes are less concerned with eliminating these thoughts or feelings, and their psychological system is free to concentrate on the present task.

One possible reason for the emergence of unpleasant inner experiences could be the dominance of the conceptualized past and feared future. Athletes might brood on past failures or the consequences of their following competition result. By doing so, they lose the contact with the present moment (i.e., the *second* cause of psychological inflexibility). Therefore, to enhance psychological flexibility, consultants work on deepening athletes' flexible, focused attention to increase the *present moment contact*. This normally involves formal or informal mindfulness exercises or moment-by-moment noticing of emotion, bodily sensation, and cognition.

The *third* reason for psychological inflexibility is the attachment to the desired self or involuntary self-absorption in a conceptualized self – the reflections and beliefs about one's own person. To solve this clinging to a desired self and to enhance psychological flexibility, ACT practitioners work on the *Self as context* process, for which a number of interventions are designed to help an athlete experience a broad and flexible sense of "I-ness." The most common problem is clinging to an excessive organization of behavior by verbal rules about the self or the excessive attachment to particular thoughts about oneself or one's habitual roles. For example, a cyclist might have the inflexible rule that he is not a sprinter and therefore never tries to train skills needed to win a race in a sprint situation.

The *fourth* cause of inflexibility is the fusion with thoughts and emotions and seeing thoughts as facts instead of what they are, namely a product of the mental processes of the brain. The process to consciously observe whatever flickers across the consciousness without identifying with them or believing that thoughts and emotions are accurate reflections of reality is called *defusion*. This process enables people to de-identify themselves from their thoughts and emotions. The focus in ACT is altering the individual's relationship with his or her cognitions rather than altering the content of cognition itself by, for example, simply observing them or "creating a distance" from the thought. The abovementioned cyclist could for example create distance from the thought "I am not a sprinter" by altering his inner dialogue to "I notice that I have the thought 'I am not a sprinter.'"

The *fifth* cause of inflexibility is neglecting or not clearly knowing what is personally important in one's own life (loss or unclarity of values). Because values are behavioral guidelines and involve a focus on reinforcers that are present in the moment-by-moment engagement in the valued action, *values clarification* is an important cornerstone of psychological flexibility. A strong connection with values beyond athletic results is an important resource in times of failure and adversity.

The *sixth* and final source of psychological inflexibility is the pursuit of avoidance goals, which leads to inaction, impulsivity, avoidant persistence, and ineffective action. A reason for not acting in line with one's own values can be the fusion with one's inner experience or the conceptualized self. Therefore, initial commitment work might involve *defusion* and *acceptance* interventions. Later, helping athletes take steps towards *committed action* can involve translating values to specific behaviors on and off the field, setting clear

behavior change goals, which e.g. lead to increased training quality, including how to deal with barriers, using implementation intentions, and using time management tools.

## **Do mindfulness and acceptance interventions work in sports?**

After many years of rapidly growing evidence of the efficacy of mindfulness- and acceptance-based interventions (MABI) in clinical psychology [13], we have observed a similar increased interest in sport psychology in the past 10 years. In fact, the number of scientific articles is increasing, and there are meta-analyses and reviews that link mindfulness and acceptance with successful athletic performance [14,15], though the findings are also controversial [16]. Based on their extended literature review of 19 empirical trials, including four randomized trials, Sappington and Longshore [15] concluded that there is preliminary support for the efficacy of mindfulness-based interventions for the enhancement of sport performance. Based on a meta-analysis by Bühlmayer and colleagues [14] including nine randomized and non-randomized controlled trials, they reported that mindfulness practice consistently and beneficially modulates dispositional mindfulness and that mindfulness practice improves performance outcomes to a meaningful extent in precision sports (shooting and dart throwing). In a very carefully conducted literature review including 66 studies of randomized trials with mindfulness and acceptance interventions compared to no treatment, Noetel and colleagues [16] observed large effect sizes for improving trait mindfulness (the general tendency to be mindful in everyday life as a long term characteristic of an individual) and performance as well as lower competitive anxiety; however, the evidence was deemed to be of low quality, meaning further research is needed.

As the concept of mindfulness still faces definitional and operationalization difficulties [17], it is challenging to compare the different findings, and hence mixed results are expected. To tackle this problem and to explain how mindfulness works in sports and what its mechanisms of impact might be, Birrer and colleagues [18] proposed a theoretical framework in which mindfulness practice and/or dispositional mindfulness (with the three aforementioned key processes) are hypothesized to generate a number of certain impact mechanisms that are likely mediated by other psychological processes. Additionally, an increase in dispositional mindfulness is hypothesized to mediate the relation between mindfulness practice and improvements in athletic performance-relevant outcomes. After almost a decade since the publication of the proposed impact framework [18], several researchers have tested some of the proposed mechanisms [19-22].

## **Mini review on recent findings on the efficiency of MABI in sports**

The aim of the following section is to briefly review the findings on MABI in the sports domain in the light of the proposed framework [18]. Because the framework from 2012 was in an early stage of research, many possible impact mechanisms were suggested, and as a result, the framework is not parsimonious. Consequently, this mini review focuses



on the three key mindfulness processes (purposeful present-moment awareness, metacognitive awareness, acceptance) and their influence on attention regulation, emotion regulation, rumination, and exposure/experiential avoidance. As main outcome variables, we focus on objective and subjective athletic performance, mental health, and well-being. Due to the limited space and the existing reviews mentioned [14-16], we focus on the research from the past five years.

Consequently, for the present mini review, 19 studies have been integrated with 15 controlled (CT) or randomized controlled trials (RCT). Twelve of the studies examined the influence of either a mindfulness intervention, mindfulness induction, or trait mindfulness on either objective or self-rated performance. In two RCTs, it was found that a mindfulness intervention program can have a positive influence on objective performance in female rowers [23] and on the post-intervention exhaustion duration in a graded exercise test of sport science students [24]. A study with recreational tennis players revealed an enhanced serve accuracy on a serve task for the mindfulness group [25]; however, this difference was below statistical significance. Short mindfulness inductions of 15-30 minutes duration had an immediate positive effect on objective performance of collegiate students in a golf putting task [26] and on the free throw performance of basketball players [22,27], although in one study, this effect was not significant [27]. One of these studies showed that basketball players' free throw performance decreased after ego depletion (the exhaustion of mental resources through the performance of tasks requiring increased self-control and willpower), but when ego depletion was followed by a mindfulness induction of 30 minutes in duration, free throw performance was maintained at a level similar to the control group (under no ego depletion condition) [22]. This result indicates that a brief mindfulness intervention might buffer the effects of ego depletion. Additionally, sport-specific dis-

positional mindfulness was a predictor of shooting performance in a real competition of competitive biathlon athletes [19]. The included mindfulness predictors explained 9% of the variance in shooting performance.

Positive effects of a mindfulness program on either self-rated or coach-rated performance have been reported for professional soccer players [28], female student basketball players [29], junior elite badminton players [30], and a mixed sample of competitive elite athletes (floorball, golf, soccer, cycling, wrestling) [20]. Additionally, in a cross-sectional study with 139 Swiss elite athletes, dispositional mindfulness was a predictor of self-rated performance [31].

Several studies have examined psychological health or well-being as an outcome of MABI. In a cross-sectional design with 222 college athletes, path analyses indicated that psychological skills and mindfulness had positive effects on sport well-being; nevertheless, only mindfulness was found to have a positive effect on global well-being [32]. In a review and meta-analysis, ten studies were examined on the influence of mindfulness on athletes' burnout [33]. The authors concluded that there is some evidence showing that mindfulness is negatively associated with athlete burnout. In RCTs, positive effects have been found on general well-being [23,28] and sleep quality [23] for rowers and football players.

An enhanced attentional regulation through MABI has been reported in three studies [19,24,34]. Several studies showed that athletes' emotion regulation (especially regarding cognitive anxiety) profit from MABI [20,22,23,27,29-31, 34,35]. Additionally, several studies reported that the effect of mindfulness on performance is mediated by improved emotion regulation [20,21,31]. Less rumination through a MABI has been reported in two studies [21,23] with rowers and in two mixed athlete samples. MABI has been shown to be suitable in enhancing exposure and reducing experiential avoidance in athletes in three studies [29,34,36].

Findings that the three mindfulness processes (purposeful present-moment awareness, metacognitive awareness, acceptance) are separate impact mechanisms of MABI are sparse because different mindfulness operationalization and mindfulness concepts are used in the selected studies; however, it has been demonstrated that MABI enhances trait mindfulness, and trait mindfulness, in turn, mediates the relationship between MABI and performance [19,20], as well as that mindfulness induction enhances state mindfulness (a temporary condition of an individual of present moment awareness in a mindful, accepting way), and state mindfulness mediates the influence on performance [22].

## Discussion

The reviewed findings indicate that trait and state mindfulness established through MABI and short mindfulness inductions are related to athletic performance, psychological health, and well-being in different athlete samples. Furthermore, trait and state mindfulness established through MABI and short mindfulness induction are related to other psychological processes, such as enhanced emotion regulation, enhanced attentional regulation, less experiential avoidance, or meta-cognitive awareness (among others), and these processes might mediate the relationship with performance and well-being. With the abovementioned scientific findings and our applied work with elite athletes in mind, we suggest that the ACT approach is a very well-suited intervention framework to enhance athletes' psychological flexibility. From the present findings, it can be concluded that athletes who struggle to control their attention and emotions, reacting to challenges with avoidance, and have general difficulties regulating their self-control may particularly benefit from MABI. Accordingly, we recommend referring athletes with the aforementioned challenges to specialists with the appropriate ACT skills. Examples of concrete intervention programs can be found in the literature [37,38]. Despite these encouraging findings, there are still considerable knowledge gaps, especially regarding mechanisms of action, dose-response relationships, and conceptual and operational issues related to the concept of mindfulness.

## Practical implications

- Third-wave cognitive behavioral methods, e.g., Acceptance Commitment Therapy, are increasingly used in sport psychology interventions
- Mindfulness and acceptance-based interventions can improve athletic performance and can promote well-being
- Positive effects of mindfulness and acceptance approaches on performance and well-being might be mediated by other psychological processes, e.g., enhanced emotion regulation
- Acceptance and Commitment Therapy offers a framework that can be implemented in daily work with athletes to promote their psychological flexibility, especially for enhancing attention and emotional regulation, as well as reducing avoidance behavior and buffering the negative effects of ego depletion.

## Acknowledgments, conflict of interest, and funding

All authors are employed by the Swiss Federal Institute of Sport Magglingen. No conflict of interest is declared.

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