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# Looking East for Mindfulness: A Glimpse of Practices and Research on Shaolin Martial Arts and Related Practices to Advance Sport Psychology

**Ying Hwa Kee**

National Institute of Education, Nanyang Technological University, 1 Nanyang Walk, Singapore 639798, Singapore; yinghwa.kee@nie.edu.sg

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**Abstract:** Although mindfulness is currently receiving attention within sport psychology, there is a lack of discussion on the Eastern origins of mindfulness in the extant sport psychology literature. Several mind-body practices linked to Chinese Chan and Shaolin martial arts are presented in this paper to illustrate their possible relevance to sport psychology. One takeaway message discussed in relation to the flow experience is that mindful performance of Shaolin martial arts is said to be integral to the psychological transformations associated with realisation of Chan (or "suchness," satori, Enlightenment), supposedly a goal more likely to be pursued by mindfulness practitioners in the Eastern culture than in the West. Research on Dejian mind-body intervention, dantian breathing and Shaolin internal martial arts such as Baduanjin and Yijinjing are briefly reviewed to examine the potential psychological benefits of such mind-body practices. Advancement in sport psychology, particularly in relation to mindfulness-related topics, could benefit from a closer examination of Chan and Shaolin martial arts practices.

**Keywords:** flow; transcendental experiences; kung fu; yoga; China

## 1. Introduction

More than a decade has passed since the first empirical research on mindfulness in the sport context was published in an international peer-reviewed sport psychology journal (see Kee & Wang 2008) [1]. Today, interest in mindfulness within sport psychology continues to grow, with researchers working on different issues related to mindfulness, such as mindfulness intervention in athletes (Moore, 2009) [2], skills acquisition (Zhang et al., 2016) [3], coaches' mindfulness (Longshore & Sachs, 2015) [4], theoretical aspects of mindfulness-performance links (Birrer, Röthlin, & Morgan, 2012) [5] and motor control (Kee, Chatzisarantis, Kong, Chow, & Chen, 2012) [6], to name a few. By and large, research supports the notion that mindfulness is efficacious for sport performance enhancement, although some cautioned about potential inadequacies in certain studies (Bühlmayer, Birrer, Röthlin, Faude, & Donath, 2017; Noetel, Ciarrochi, Van Zanden, & Lonsdale, 2017) [7,8]. Overall, it can be agreed that mindfulness has a place in sport psychology for its potential to enhance athletes' performance and psychological well-being (Baltzell, 2016) [9].

It is commonly accepted that mindfulness practices originated from the East, mainly from practices in Buddhism (Hanh, 1991) [10]. However, with the proliferation of the mindfulness movement in the West (Schmidt, 2011; Van Dam et al., 2017) [11,12], most mindfulness research and applied work inevitably drew on the definitions of mindfulness and research contributed by Western scholars (e.g., Bishop et al., 2004; Cullen, 2011; Gu, Strauss, Bond, & Cavanagh, 2015) [13–15]. For example, Kabat-Zinn's (1990) [16] definition of mindfulness as moment-to-moment awareness, focusing on the present moment in a non-judgemental, non-reactive and open fashion, is recognised as one of the

most frequently invoked definitions (Van Dam et al., 2017 [12]), and is suited to Western audiences (Kabat-Zinn, 2011) [17], perhaps for its ease in adoption as a definition. Additionally, concepts such as acceptance (Moore, 2009 [2]) and self-compassion (Mosewich, Crocker, Kowalski, & Delongis, 2013; Neff, 2003) [18,19] have been incorporated into contemporary mindfulness interventions like the Mindfulness-Based Cognitive Therapy (MBCT: Hayes, Luoma, Bond, Masuda, & Lillis, 2006) [20], Acceptance and Commitment Therapy (ACT: Teasdale et al., 2000) [21], and Mindful Self-Compassion (Neff & Germer, 2013) [22].

Schmidt (2011) [11] compared the notion of mindfulness between the East and West, and acknowledged that there is a difference in how the West has interpreted mindfulness from the East. Schmidt (2011) [11] highlighted that one key difference concerns the intention of practising mindfulness, with those in the West tending to have intentions related to secular aims of self-regulation or coping with life challenges, compared with those in the East, who may more likely see mindfulness as part of a spiritual path to achieve self-transformation. As such, he proposed that "these Western forms of mindfulness are different from its Eastern origin" (Schmidt, 2011, p. 36) [11] and that it is misleading to believe that the notions of mindfulness in the East and West are the same. Schmidt (2011) [11] further echoed the perspective put forth by Shapiro (1992) [23], who suggested that those in the West who become more adept in mindfulness practice may progress to develop an interest in the origin of the practice and could subsequently shift their intentions for mindfulness practice towards spiritual growth.

With the mindfulness movement and research flourishing in the West (Lee, 2015) [24] and receiving keen interest within sport psychology (Baltzell, 2016 [9]; Baltzell, McCarthy, & Greenbaum, 2014; Baltzell & Summers, 2018 [25,26]), sport psychologists and athletes in the West may soon see the need to access the "origins of mindfulness practices" after becoming familiar with the Western interpretations of mindfulness, as Schmidt (2011) [11] and Shapiro (1992) [23] have speculated. Even if it is not for the purpose of self-transformation, i.e., developing one's own spirituality in the Eastern sense, accessing the "origins of mindfulness practices" or examining traditional practices in the East may provide important clues as to how the mindfulness practices currently adopted in the West within sport psychology can be enhanced. To this end, although notable applied sport psychology scholars like Terry Orlick (2016) and Peter Terry (2014) [27,28] have acknowledged that certain sport psychology techniques featured in the West have ancient Eastern civilisations as their origins, detailed coverage of topics related to Eastern origins of mindfulness practices is generally limited in international sport psychology academic outlets.

Given this backdrop, the present paper seeks to introduce works related to traditional mindfulness-related practices originally found in China that could have relevance for advancing sport psychology, specifically for developing mindfulness among athletes. This work is useful as China is known to have rich traditions in Chan (or Zen) Buddhism (Griffith Foulk, 2007) [29] and in mindful movements repertoires such as Shaolin martial arts, taijiquan and qigong (e.g., Chan, 2010; Frank, 2006) [30,31]. This work will serve as an introductory reference for sport psychology scholars and practitioners interested in adopting elements of Chan and Shaolin martial arts traditions for enhancing athletes' performance and well-being, or for future research. Such a reference could enrich the mindfulness movement in the West, providing multiple signposts for colleagues to reach the "origins of mindfulness practices." Specifically, several traditional mindfulness-related practices found in China, such as Dejian mind–body intervention (DMBI), dantian breathing, Baduanjin (Eight Brocade Qigong), and Yijinjing (Muscle-Tendon Change Classic) are discussed for the interest of athletes, coaches, and sport psychologists looking to advance current mindfulness practices in sports. Even though these previous investigations were not specifically examining sport or athletes related issues, the coverage of these works in this paper serves to provide readers with some introduction of these practices. Colleagues previously unware of such work may, upon gaining some understanding, further investigate the value of such practices in the context of sport, and that could possibly enrich the field of sport psychology.

## 2. Brief Introduction of Chan Buddhism

The term Chan (Zen in Japanese; dhyana in Sanskrit; jhana in Pali) can be translated as meditation (Jenkins, 2008) [32], indicating that the Chan approach is fundamentally meditation-based, while not strictly restricted to sitting meditation. Chan or Zen meditation involves mental concentration practices aimed at interrupting the reasoning process of the intellect and, with the exclusion of extraneous thoughts (other than the subject of meditation), consciousness is heightened (Iwano, as cited in Kato, 2005, p. 125) [33]. As a practice in Buddhism with the implicit aim of achieving Enlightenment, Chan Buddhism does not emphasise readings of sacred texts and philosophical discourse, as other approaches would. Instead, the Chan approach emphasises direct experiences of enlightenment (or satori in Japanese) and involves "directly pointing at the human heart-mind, seeing into one's nature and becoming the Buddha" (Emmanuel, 2016, p. 207) [34]. There are various ways in which Chan practitioners who are deemed ready by their masters can realise this direct experience of enlightenment, such as through hearing a sudden and unexpected shout by the master (Steiner, 2014, p. 106) [35] or contemplating a koan (e.g., what is the sound of one hand clapping?) (Jaffe, 2015) [36]. Seen in its totality, the Chan approach involves a combination of sitting meditation and attention to daily activities of a physical nature, and timely intervention from the masters that brings the practitioner to realisations of Chan.

In China, the Chan approach originated from Bodhidharma, who arrived from India around 520 CE (Suzuki, 1958, p. 176) [37]. It was known that Bodhidharma, the 28th Patriarch of Buddhism, was an accomplished master following the lineage originating from the historical Buddha Sakyamuni (Suzuki, 1958, p. 170) [37]. The historical Buddha is said to have simply held up a single flower when he was asked to teach before a large assembly on Vulture peak (Hershock, 2004, p. 76) [38]. This unexpected action left the entire assembly speechless, except for Mahakasyapa, who understood the Buddha's action and smiled. In this episode, the Buddha was transmitting mind-to-mind a realisation to Mahakasyapa that does not depend on words and letters, but simply a "suchness" for the disciple to recognise. "Suchness" or "thusness" has been referred to as "as-it-is-ness," with nothing to add or negate; seeing things as they are (Emmanuel, 2016, p. 207) [34]. It can be said that the practice of Chan has the implicit goal of realising "suchness," which is beyond words and has since been passed down from the historical Buddha to Mahakasyapa to Bodhidharma and beyond.

It is beyond the scope of this paper to provide an extensive discourse on the Buddhists' notion of Enlightenment (or satori) or "suchness," but we can draw some reference from D. T. Suzuki for the current discussion, who noted that a person with such an experience maintains an unexpected perception of the surrounding world, with the union of all its opposite and contradictions "harmonized into a consistent organic whole" (Suzuki, 1958, p. 230) [37]. In contemporary mindfulness lingo, this would somewhat correspond to paying attention to the ongoing moment without judgement (Kabat-Zinn, 1990) [16], because opposite views or the duality of views is transcended. The accomplished Chan masters are said to be able to sustain such experience on a daily basis (Suzuki, 1958, p. 230) [37]. For the rest who are training in Chan, it would mean developing oneself by removing the evaluative mind, such as in the case of an archer following the Chan path practising drawing the bow and shooting arrows to the point where it becomes an "effortless effort" (Herrigel, 1953 [39]; Humphreys, 1994 [40]; Jenkins, 2008 [32]). Sport psychologists may be able to relate description of such transcendental experience to the elusive flow experience (Jackson & Csikszentmihalyi, 1999 [41]), which has been found to be associated with mindfulness (e.g., Kee & Wang, 2008 [1]; Aherne, Moran, & Lonsdale, 2011 [42]). Flow dimensions of loss of self-consciousness and action-awareness merging (Jackson & Csikszentmihalyi, 1999 [41]) seem to correspond to removal of the evaluative mind and "effortless effort," respectively. For a fuller explanation of Zen Buddhist concepts and their applications in sport, readers are directed to Jenkins (2008) [32].

## 3. Shaolin Martial Arts and Chan

This brief introduction to Chan Buddhism is necessary to lay foundations for discussing Shaolin martial arts and its related practices in light of mindfulness practices. Shaolin Temple, where Shaolin martial arts originated, was established in 495 CE at the Song Mountain within Henan Province, China (Ma, 2008) [43]. It is recorded that Batuo, a monk from India, was Shaolin Temple's first abbot. One of Batuo's early disciples, Sengchou, was adept in martial arts and, thus, Sengchou has been recognised as a key contributor to the initial development of the Shaolin martial arts tradition by some scholars (e.g., Zhu, Lin, & Cai, 2004) [44]. Subsequent development over the years, requiring the monks to protect the temple and the country, also contributed to the further development of Shaolin martial arts (Zhu et al., 2004) [44].

Shaolin Temple became a key site for transmitting Chan Buddhism with the incorporation of martial arts only after Bodhidharma arrived around 520 CE ("Shaolin Temple," n.d.). Sitting meditation, as a way of training the mind, was widely practised by Shaolin monks. Bodhidharma was said to have practised meditation facing a wall for nine years (Dumoulin, 2005, p. 93) [45], illustrative of the emphasis on sitting mediation in this tradition. However, with sitting meditation came the ill effects of prolonged sitting such as numbness in the limbs and lack of blood circulation (Guo, 2017, Wang, 2015) [46,47]. Shaolin martial arts, which include breathing and body strengthening repertoires, were developed and practised to eradicate these illnesses. Consequently, as martial arts training induces health benefits, knowledge gathered from practising martial arts and the need for healing from practice-induced injuries also culminates in the Shaolin style of medicine and curative methods, which are aligned with Buddhist principles (Guo, 2017 [46]; Qiu, 2006 [48]; Wang, 2015 [47]; Zhao & Xin, 2014 [49]).

## 4. Unification of Chan and Martial Arts

A central principle of Shaolin martial arts is that of the unification of Chan and the martial arts (Wang, 2011; Zhao, 2014) [50,51]. In Shaolin martial arts, the emphasis on Chan meditation and martial arts is said to be balanced. Typically, practitioners would follow a regular sitting meditation practice and, during their practise of martial arts, the mindfulness or realisations they acquired as a result of their meditation are infused into their martial arts practice. The latter may be understood as mindfulness during movements, or mindful movements, such as present-focused sensory awareness in yoga (Khanna & Greeson, 2013) [52]. In a practical sense, the expectation is for the eyes, hands, mind, and body to be involved as the moves are made during martial arts practice, such that there is harmony or a merger between intention and movement (Wang, 2011, p. 46) [50]. Furthermore, as a result of the practice of mindfulness during martial arts, the quality of sitting meditation can also be enhanced. At a physical level, the body also receives some exercise to counteract the negative effects of prolonged sitting (Zhao, 2014) [51]. Such reciprocity or unification of Chan and martial arts can be further epitomised by the realisation of the notion "martial arts within Chan" and "Chan within martial arts." As mentioned earlier, because Chan, as a Buddhist tradition, downplays the importance of transmitting teachings through words, the practise of martial arts presents practitioners with opportunities to experience states of enlightenment or realisations that are important for their spiritual path (Zhao, 2014) [51].

It is known that there are three stages in Chan and Shaolin martial arts practice (Zhao, 2014, p. 115) [51]. The first stage is "seeing the mountain as the mountain." Here, Buddhist foundational practices, such as prostrations, sitting meditation, and mantra recitation, are undertaken to help tame the otherwise wandering mind. Basic martial arts skills are practised, supported by purposefully focusing on one's dantian to help focus one's mind. This stage (seeing a mountain as it is) suggests a literal adherence to instructions to stay on task during practise. After a period of practise, the second stage of "seeing the mountain not as a mountain" may emerge, whereby the practitioner becomes unaffected by external events or whatever is perceived. The ability to see something for what it is rather than be affected by its superficial aspects is a characteristic of someone in this stage. For example,

if there are certain doubts or unpleasant feelings, then the practitioner at this stage has the ability to "figure it out" and move on. In this stage, the practitioner loosens excessively forceful moves and their movements appear more relaxed. Even more focus is placed on the conscious tracking of one's breath, which results in heightened composure. The third stage is said to be where the advanced practitioner is "seeing the mountain still as the mountain." This is a state where attachment to the notion of one or more, or even none, is abandoned. Accordingly, the mental state is one of loss of ego or selflessness (Austin, 2013) [53]. To the practitioner at this stage, the concept of the form of the moves and its absence coexists. The same can be said for the coexistence of intention and its absence. In terms of the forms displayed during combat, frivolous and complicated moves are forsaken, leaving behind only the simplest form. The display of martial arts is also said to be graceful and natural (Zhao, 2011) [54], and indicative of the practitioner's state of mind, associated with transcendence of duality. The highest goal of Shaolin martial arts practice is a state where one is mindful of Chan in every moment, where there is transcendence of grasp beyond notion of self and object (Wang, 2011, p. 45) [50]. In sum, the initial stage for the Shaolin practitioner is to practice the skill somewhat mechanically; however, as development progresses, psychological transformation is pursued until psychological transformation is achieved along with perfection of skills. These developments are underpinned by mindfully practising the physical skills across all stages, with a refinement of mindfulness capability occurring over time.

## 5. Forms of Shaolin Martial Arts

Briefly, Shaolin martial arts can be classified into several systems. Zhao and Xin (2015) [49] classified them into the following five systems: neigong or internal martial arts, stance training, forms or routines, weapons, and combative. Internal martial arts, such as Baduanjin or Eight Section Brocade and Muscle-Tendon Change Classic, are considered as qigong and are said to have positive effects on physical health by way of strengthening the internal organs (Zhong & Timofeevich, 2006, p. 81) [55]. Stance training involves holding specific stance positions for prolonged periods. One common stance is the horse stance, where a half-squat position is held. Undertaking such training has the effect of training the body in transfering the centre of gravity downward to achieve stability (Wong, 2016, p. 35) [56]. Stance training is known to be an important foundation phase before further advances in practice. Next, forms or routines are choreographed as solo movement sets to facilitate mastery of specific strokes in martial arts. These solo practices also serve to help practitioners familiarise themselves with the mechanics of the actions for use in combat, such as footwork (Klingborg & Hung, 1998, p. 47) [57]. Performances of form or routine has been included in major international martial arts competitions (see http://www.iwuf.org/). Similarly, implements such as swords and poles are included in certain forms or routine practices (Yang & Bolt, 2000) [58]. The last category is the combative category involving duel, using skills built from previously described categories of practices. In international competitions, it is often called the sanda or sanshou.

Regardless of the categories, the unification of Chan and martial arts is pursued during practise, i.e., practitioners are expected to maintain focus while performing Shaolin martial arts, by applying meditative or mindful efforts. It is worth highlighting that the emphasis is very much on moving mindfully during the practise, unlike many contemporary sports where mindful moving is not particularly emphasised and perhaps even construed as counterproductive because strong internal or proximal focus could possibly results in poorer movements (McKay & Wulf, 2012; Wulf, Lauterbach, & Toole, 1999) [59,60]. However, when practising martial arts as a closed skill (such as in stance training or routines), there should be little concern about the negative effects of internal focus given its self-paced nature.

For the Shaolin martial arts practitioner, a common technique for maintaining focus during movement is to pay mindful attention to one's breathing (Shi, 2008) [61] while mentally observing the lower dantian breathing. This practice is said to "stimulate the Dan Tian region and to enhance the blood and Qi circulation" (Chan, Cheung, Sze, Leung, & Shi, 2011, p. 4) [62]. Through practise, practitioners

may advance through the stages outlined earlier, benefiting in terms of physical, psychological and spiritual health. The right support from experienced and qualified masters could be critical in guiding the practitioner along the path towards the advanced stage because the realisation of Chan through Shaolin martial arts is best transmitted by an experienced master who reveals behavioural cues or hints at the right time, rather than learning from reading manuals (Huang, 2013) [63]. Nevertheless, readers interested in Shaolin martial arts can refer to the Shaolin Temple official website (http://www.shaolin.org.cn/EN/index.aspx) as well as other sources for further introductions about this style of martial arts.

## 6. Existing Empirical Research on Shaolin Martial Arts Related to Mindfulness

The purpose of the current paper is to introduce the relevance of Shaolin martial arts for advancing mindfulness research and practice in sport psychology. As such, it will be appropriate to review relevant empirical research on Shaolin martial arts that are associated with psychology. Some empirical research on this topic was conducted in China and Hong Kong, and it is timely to review some of these works published in both English and Chinese. Three categories of works are covered below: Chan-based Dejian mind–body intervention (DMBI), dantian breathing strategies, and internal martial arts practice.

1. **Chan-based Dejian mind–body intervention.** Over the last decade, a group of researchers in Hong Kong led by Agnes Chan carried out several studies on the effectiveness of the Chan-based Dejian mind–body intervention (DMBI) (e.g., Chan et al., 2012) [64]. Their approach is based on the Shaolin tradition of Chan, martial arts, and healing, which they termed as "Chanwuyi." Shi Dejian, a Shaolin monk and grandmaster of Chanwuyi, played a key role in developing the intervention; thus, his name (Dejian) is included in the name of the protocol.

Four key components were integrated in DMBI: Chan practice, dietary monitoring, mind–body exercises, and clearing orifices (Chan et al., 2012) [64]. The Chan practice component involves understanding problems in accordance with Buddhist philosophy by encouraging participants to listen to their body in order to increase awareness of how their desire and obsession affect their mental and physical health. Dietary guidelines were also given for participants to reduce certain foods that are deemed to generate excessive internal heat and are counterproductive for enhancing mood and physical health according to Shaolin medical principles. These foods include ginger, garlic, green onion, spicy foods, eggs, meat, and fish. Healthy food, such as fresh vegetables, fruits grains, beans, mushrooms, nuts, and root vegetables, were recommended. Shaolin mind–body exercises involving sets of breathing exercises and slow movement exercises (considered to be Shaolin internal martial arts) are prescribed. They were taught to attend to their breathing by resting their hand on the dantian area (lower abdomen) while they breathe in and out. They were also taught to gently massage their nasal bridge as part of the orifice clearing component. This nasal bridge massage exercise is simply performed by placing both index fingers on each side of the nasal bridge and very slowly alternating the up and down action, keeping the index fingers in contact with the nose very lightly.

Earlier single-case studies showed some promising results, whereby an adolescent with Asperger's disorder showed improved self-control (Chan, Sze, & Shi, 2008) [65] and a patient with chronic epilepsy improved in language, memory, attention, behavioural initiation, emotional control, social functioning, and quality of life (Chan, Sze, Cheung, Lam, & Shi, 2009) [66]. Randomised controlled trials were also conducted. In Chan et al. (2012) [64], 75 participants diagnosed with major depression disorder were randomly allocated to one of the following three groups: cognitive behavioural therapy (CBT), DMBI, or waitlist. Following a 10-week intervention, comparable improvements for both the CBT and DMBI groups were observed, indicating that DMBI can be considered an alternative choice of treatment for depression. Furthermore, more participants in the DMBI group reported reduced use of antidepressants compared with participants in the CBT group. The outcome also suggests that the ability to concentrate and sleep, as well as intestinal health, were superior for those in the DMBI compared with CBT group. In another study by Chan et al. (2011) [67] that compared adults with

various degrees of depressive mood symptoms undergoing DMBI and CBT, it was found that the reduction in depression was comparable between the groups. However, those with moderate to severe depressive mood benefited from DMBI by showing a significant reduction in depressive mood, while those of similar severity in the CBT group did not. Most importantly, results from electroencephalogram (EEG) showed that there is a significant increase in resting prefrontal activation asymmetry among those in the DMBI group but not in the CBT group, suggesting beneficial effects of dantian breathing training over a month by changing the activity of the brain associated with enhanced positive mood. Given the relatively short intervention period of four 90-min sessions and a month of self-practise, the results are considered encouraging.

In summary, the evidence gathered through these studies suggests that the DMBI approach, which features mind–body exercises that originate from Shaolin, may have psychological benefits. The effects of DMBI on positive mood, sleep, and changes at the neurophysiological level could provide some cues for researchers and practitioners in sport psychology when implementing similar approaches. Although little was mentioned about the underlying Chan-related psychological processes commonly associated with self-transcendence, this line of evidence suggests that moving mindfully may have some value for promoting well-being.

2. **Dantian breathing strategies**. According to traditional Chinese medicine, the lower dantian area, which is half an inch below the navel, is an area where Qi energy is stored and nourished. It is, therefore, a region of interest in terms of Chinese martial arts training. In fact, the status of dantian has also been equated to the second brain, capable of regulating physical health and emotions (Chia, 2004) [68]. An earlier fMRI study by Chan, Cheung, Chan, Yeung, and Lam (2006) [69] demonstrated that stimulation of the lower dantian region leads to extensive cortical and subcortical activations, providing some evidence of its neurophysiological basis. Empirical research on dantian breathing is surprisingly scarce, even in mainland China. Zhang and Fu (2011) [70] administered dantian breathing for two months to patients with long-term pulmonary heart disease and reported better effects in terms of recovery compared with the control group. In another study by Liu, Liu, Liu and Ming (2002) [71], evidence of restoration of the endocrine system among patients was found to be associated with dantian breathing practice intervention over 30 one-hour daily sessions.

As described by Chan et al. (2011) [62], the Shaolin dantian breathing exercise comprised the passive and active forms. Regardless of form, the practitioner begins by placing a hand(s) gently on the dantian area, half an inch below the navel. In the passive form, the practitioner pays attention passively to the dantian area when inhaling and to the nose while exhaling with eyes closed. In the active form, during exhalation, there is a tightening of the anal and abdominal muscles with closed lips and naturally opened eyes. During inhalation, there is total relaxation with eyes closed. These two techniques have to be practised together, interchangeably within a session, so as to enhance the blood and Qi circulation, e.g., five passive forms followed by one active form. The expected immediate outcome is that the practitioner would feel relaxed and/or warmed after some practise, and could then stop.

In a study to examine the effectiveness of dantian breathing, Chan et al. (2011) [62] randomly divided 44 participants into two groups to compare Shaolin dantian breathing and progressive muscle relaxation in terms of EEG measurements (alpha asymmetry and theta coherence). Participants underwent four weekly 90-min training sessions (six hours of training within one month) in either condition. The results show that the Shaolin dantian breathing group had enhanced temporal alpha asymmetry and theta coherence levels after the intervention period. The authors noted that the enhancement of both temporal alpha symmetry and theta coherence suggested that Shaolin dantian breathing may be useful for the induction of relaxed and attentive mind states.

Given the emerging evidence supporting the value of dantian breathing, its use as a performance enhancement strategy in sport should be further explored in sport psychology. In terms of whether dantian breathing necessarily constitutes mindfulness, the question seems to be irrelevant as breathing exercises involving dantian necessitate mindful attention to begin with for most people.

3. **Internal martial arts practice**. Some empirical work on the psychological effects of Shaolin internal martial arts has also been conducted, mainly in China. By and large, Baduanjin and Yijinjing are the two forms of Shaolin martial arts practices that are most commonly investigated. The key emphasis during these practices is the regulation of mindful attention on movements. The practitioner is taught to suspend thoughts and to maintain focus on certain regions of the body with the aim of feeling the flow of Qi through the body (Shetler, 2012) [72]. Baduanjin consists of eight moves involving stretching and twisting of body torso and limb actions in a slow and controlled fashion. Slow breathing, relaxation, and concentration characterise Baduanjin, which is said to have health benefits through daily practise. A description of the Baduanjin moves can be found in Koh (1982) [73]. Yijinjing, which can be translated as "change of tendons and sinews methods" or "Muscle-Tendon Change Classic," is relatively intense and practising it is said to strengthen muscles and tendons (Zhu, 2014) [74]. Both gentle and intense moves are found in the Twelve-Section Exercise Routine of Yijinjin, which is centred on twisting, flexing, and stretching of the spine. Again, the emphasis of the practise is placed on gentle and easy breathing and keeping the mind tranquil. Zhu (2014) [74] provided a comprehensive chapter on the instructions of Yijinjing as well as Baduanjin and Wuqinxi (The Five Animal Frolics).

Several publications on Baduanjin had appeared in English peer-reviewed journals thus far. They include reviews (e.g., Jiang, Tan, & Yuan, 2017 [75]; Zou et al., 2017, 2018 [76,77]) and intervention studies examining the effects of Baduanjin intervention on various outcomes (e.g., Chan et al., 2017 [78]; Li et al., 2015 [79]; Tao et al., 2017 [80]). The review performed by Jiang et al. (2017) [75] concluded that there is potential for Baduanjin to significantly improve insomnia based on the current literature. Another review on Baduanjin by Zou et al. (2018) [76] examined the effects of Baduanjin on people with chronic illness and concluded that mindfulness-based Baduanjin exercise is useful in alleviating musculoskeletal pain and improving sleep quality. Collectively, these reviews suggest that Baduanjin is useful for improving sleep, which may provide sport psychology some new directions for investigation as sleep is an important issue in an athlete's recovery cycle (Fullagar et al., 2015) [81].

Several experimental studies demonstrated the usefulness of Baduanjin in promoting desirable psychological effects. For example, Tao et al. (2017) [80] conducted an fMRI study to examine the effects of Taichiquan and Baduanjin training over 12 weeks on elderly adults' brain function and memory, and revealed significant improvement, relative to the control group, in mental control, recognition, touch, and comprehension memory through these interventions. Chan et al. (2017) [78] also showed that their intervention of 16 90-min Baduanjin qigong exercise sessions and daily 30-min self-practice within nine consecutive weeks significantly reduced anxiety and depression symptoms for their female participants with chronic fatigue syndrome-like illnesses. They also gathered evidence of significantly raised plasma adiponectin levels associated with the Baduanjin practices, which serves to corroborate with the reduced depression symptoms. Such a reduction in depressive mood was also reported in another eight-week intervention study on healthy college students conducted by Chen, Yue, Tian, and Jiang (2016) [82]; in addition, these researchers demonstrated that Baduanjin could help improve executive function. Similarly, Li et al. (2015) [79] also provided some evidence to show that 12-week Baduanjin exercise training (as compared with usual exercises) leads to improved attention, in addition to a couple of physical benefits such as lower limb proprioception, enhanced cardiorespiratory endurance, flexibility, and explosive force of lower limbs.

It is also of interest to briefly review intervention studies on Baduanjin published in Chinese to expand the discussion as non-Chinese language readers may have difficulty reading them. In an intervention study implemented over a year, Fang et al. (2014) [83] showed that inclusion of Baduanjin to health education had comparatively better effects on psychological health of patients with impaired glucose tolerance compared with no inclusion and inclusion of walking exercise. In a study on patients with generalised anxiety disorders, Zhang, Zhang, and Shen (2016) [84] compared the effect of supplementing Baduanjin practice combined with conventional Western-style generalised anxiety disorders intervention against a treatment without the Baduanjin supplementation and found that the former was more effective in alleviating the condition through the 12-week intervention. The authors

attributed the positive effects of Baduanjin to participants acquiring increased familiarity in regulating one's movement, mind, and breathing. Gao, Liu, Zhang, Song, and Yan (2012) [85] also found that male patients with chronic schizophrenia reported lower negative symptoms following a 12-week Baduanjin intervention relative to a control group that received routine care. Liao et al. (2011) [86] reported promising effects on quality of life arising from six weeks of practising Baduanjin among those who suffered from chronic fatigue. Xiong and Liu (2015) [87] also found that Baduanjin combined with acupuncture improves sleep for patients with insomnia. Again, by and large, the beneficial effects of Baduanjin on various psychological functions are observed.

Compared with Baduanjin, Yijinjing is less researched. No English publication was found at the point of writing; however, several Chinese publications revealed positive psychological outcomes associated with Yijinjing practice. For example, Shi, Li, Wang, Siang, and Lei (2005) [88] found that Yijinjing practice over six weeks was associated with significant reduction in self-reported anxiety in elderly participants. Liu (2013) [89] also suggested that Yijinjing has some comparable effect with Taijiquan in reducing depression among university students after eight weeks of four one-hour weekly sessions. Lastly, a comparison of autonomic nervous system regulation between the practise of traditional Yijinjing and a new simplified version of Yijinjing over two months suggests that both practices are effective based on heart rate variability measures (Wang, Shi, Xiang, Lei, & Zheng, 2009) [90].

Taken together, existing research on Baduanjin and Yijinjing suggest that there is potential for some athletes to benefit from such practices given their positive effects on brain function, depression, sleep, and anxiety in some population. As mindful attention to movements underpins these Shaolin internal martial art practices, coaches and sport psychologists may consider exploring the possibility and benefits of developing athletes' mindfulness through such practices, not forgetting they have physical benefits too.

## 7. Implications for Sport Psychology

1. **Development of mental skills.** As a field, sport psychology seeks to advance the development of mental skills techniques and their adoption by athletes to support them in performance and psychological well-being. The present discussion has revealed some Chan-related practices (e.g., Baduanjin, Yijinjing) that may have benefits for athletes' development of mindfulness in particular. For example, in relation to mindfulness practice, dantian breathing appears to be a promising mindfulness exercise for athletes to adopt given that paying attention to the rise and fall of the lower abdominal region is a more relatable task compared with various forms of eyes-closed sitting meditation. With frequent practice, it is probable that attention to one's dantian may become part of an athlete's self-regulating strategy for refocusing in sport. For example, before taking a free-throw shot in basketball, focusing on dantian breathing could serve to calm down some nerves. Indeed, this particular issue is worthy of deeper exploration given that Gooding and Gardner (2009) [91] had earlier studied the basketball free-throw problem in relation to mindfulness and free-throw routines.

By the same token, elements of DBMI may be relevant for use within psychological skill training settings. In particular, it is likely that the practise of simple Shaolin mind–body exercises involving mindful practice of slow movements' repertoires could purposefully help athletes develop mindfulness. Past research also demonstrated such possibility (Schure, Christopher, & Christopher, 2008) [92], and practising Baduanjin appears to be a viable option given its relative simplicity and lower cognitive efforts and physical energy requirements (Chow & Tsang, 2007) [93]. In fact, Wang, Seo, and Geib's (2016) [94] development of a Qigong programme for children, entitled "Health Qigong for Stressed Children," was adopted primarily from Baduanjin and would be a good reference for interested colleagues looking to create a similar programme manual for athletes.

Finally, it is also worth highlighting the potential for nasal bridge massage described in several of Chan's work (e.g., Chan et al., 2011) [67]. Essentially, the practise of this task simply involves alternating the upward and downward motion of one's two index fingers with the fingers lightly

touching either side of the nose bridge, which is akin to the feathering massage technique (Trevelyan & Booth, 1994) [95]. The task is done in a very slow fashion such that mindful attention of this task may be naturally facilitated as a result. While empirical research on this technique is scarce and can only be found as part of DMBI research, according to writings on ancient Shaolin martial arts (Chan & Sze, 2013) [96], the performance of this task is said to clear the nasal orifice, leading to better breathing and psychological well-being. The therapeutic effects of nasal bridge massage is plausible because mindful attention may be simply elicited when one controls his or her fingers in close contact with the face—a significant sensory organ of the body (Siemionow, Gharb, Rampazzo, 2011) [97]. Another somewhat similar technique involving percussion or tapping using fingers on one's face ("Emotional Freedom Techniques") has generated some interest and discussion in the scholastic space as it too seems to be useful for alleviating stress despite its simplicity (Church & Feinstein, 2017) [98]. As preliminary findings on the application of emotional freedom techniques in sport suggest that this approach is promising, Church and Downs (2012) [99] and Church and Feinstein (2017) [98] suggest that such a technique may be useful for boosting athletes' confidence. Similar advances could be made through the use of nasal bridge massage technique if more research conducted in sport samples show positive results.

2. **Expanding on unification of Chan and movement for sport psychology**. Although the sport psychology literature has seen sporadic mentions of Zen (e.g., Jenkins, 2008) [32], the Zen or Chan approach is far from being a readily adopted approach in sport. To this end, the concept of unification between Chan and martial arts, when it is better understood, can be particularly relevant for advancing contemporary sport psychology, skills acquisition concepts, and mindfulness skills training in a substantive way. Specifically, the concept of unification of Chan and movement offers some avenues to better understand what the highest level of skill acquisition and flow experiences in sport may entail.

The first relevance arising from this discussion concerns development of skill expertise. For Shaolin monks, martial arts practise involves countless repetitions over a long period such that the "essence" of martial arts can be realised, signifying high proficiency in the skills. While this kind of lingo (i.e., "essence") is not characteristic of current sport psychology or motor learning writings, realising the "essence" of a skill can parallel with that of an athlete mastering the technicalities of the target skill to an extremely high level as explained by stages of learning theories. In Fitts and Posner's (1967) [100] stage of learning model, it would parallel the autonomous stage of learning, where there is almost no reliance on cognition as skills are performed automatically. Similarly, it would also correspond to Newell's final stage of learning—skilled optimisation of control, where the learner becomes adept in exploiting the dynamics of the environmental properties to display optimal skill performance (Davids, Button, & Bennett, 2008) [101].

Where the traditional stage of motor learning models stops at the physical aspects of expert actions, the unification of Chan and martial arts points to a psychological explanation and approach to this supposedly highest level of skill acquisition. Indeed, for Shaolin martial arts practitioners, martial arts practice, supported by meditation, is for the purpose of facilitating the realisation of Chan experientially and psychological transformation. This emphasis on emptying the mind while practising, however, may still be facilitative for achieving skills expertise, nevertheless, as implicit learning—downplaying the role of explicit instructions—has been known to have some effects in facilitating skills acquisition (e.g., Maxwell, Masters, & Eves, 2000; Orrell, Eves, & Masters, 2006; Zhu et al., 2011) [102–104]. As it stands, the current stages of learning models for skills acquisition does not delve deep into the specifics of psychology of the highest level performance or final stage of learning in particular. To this end, the three stages of Shaolin martial arts practice alluded to earlier ("seeing the mountain as the mountain," "seeing the mountain not as a mountain," and "seeing the mountain still as the mountain") could be suitable parallels for future refinement to stages of motor learning models for scholars interested in making connections to the penultimate level of human skill acquisition with psychological transcendence. After all, the states of mind of the advanced stages of

practice or performance were deliberated in past literature on sports and Zen (e.g., Herrigel, 1953) [39], flow (Jackson & Csikszentmihalyi, 1999) [41], and peak performance (Orlick, 2015) [27].

The second relevance arising from this discussion concerns the psychology of peak performance: flow. As the realisation of Chan is associated with an attitude that predisposes fearlessness during task performance, peak performance could become more probable as a result of Chan-related practices. Take the case of combative encounters, which is part of martial arts, when one transcends beyond the duality of positive and negative outcomes with the realisation of Chan, including possible death, the mind can be free to focus on the task on hand and better performance could be facilitated (Hong & Jiang, 2004, p. 46) [105]. Such ideology has been communicated in previous works, such as when Gallwey (2014, Chapter 2) [106] questioned about the value of trying hard to achieve in tennis, and, instead, teach that not being emotionally involved allows players to perform free of control and with increasing confidence. This concept can also be found in Phil Jackson's words: "Approach the game with no preset agendas and you will probably come away surprised at your overall efforts" (Jordan, 2014, p. 36) [107]. In practice, insights gained from meditation and in martial arts may help the practitioner develop a "non-striving" attitude towards overcoming the opponent while retaining the seriousness in perfecting skills for its own sake. Eventually, the practitioner adopting the Chan approach arrives at a realisation whereby the concept of defeating the opponent and getting beaten by the opponent is transcended (Wang, 2011) [50]. In the language of Western mindfulness literature, that would likely correspond to the non-judgemental acceptance of winning and losing. Incidentally, non-judgemental acceptance has also been a core feature of mindfulness training found in sport (e.g., Moore, 2009) [2], there may be scope for further development there when Chan concepts are also considered. In sum, the practise of Chan and Shaolin martial arts, and in particular, the unification of Chan and martial arts found in Shaolin martial arts, could be considered as a structured form of training that develops mindfulness and acceptance that has implication for the understanding of peak performance psychology.

## 8. Summary

Although mindfulness is currently receiving considerable attention within sport psychology (Baltzell, 2016) [9], there is a lack of discussion on the Eastern origins of mindfulness in the extant sport psychology literature. In view of the possible need for sport psychologists, coaches and athletes to want to more learn about the origins of mindfulness practices, having practised mindfulness through contemporary approaches for performance enhancement (Schmidt, 2011 [11]; Shapiro, 1992 [23]), and several mind-body practices linked to Chinese Chan and Shaolin martial arts are presented in this paper as a broad introduction. Specifically, contents related to Chan Buddhism, Shaolin martial arts, and the unification of Chan and Shaolin martial arts are introduced. The main takeaway message is that mindful performance of Shaolin martial arts is integral to the psychological transformations associated with realisation of Chan (or "suchness," satori, Enlightenment), supposedly a goal more likely to be adopted by mindfulness practitioners in the Eastern culture than in the West (Schmidt, 2011) [11]. In that state, it is said that duality of perception is suspended, akin to non-judgemental awareness. By appreciating such an elusive psychological quality from the angle of non-judgemental and acceptance aspects of mindfulness, which is more regularly featured in contemporary mindfulness approaches in the West (e.g., Moore, 2009) [2], Western audience may make the connections with Eastern origins of mindfulness more easily.

Further, research on DMBI, dantian breathing and Shaolin internal martial arts such as Baduanjin and Yijinjing are briefly reviewed to examine the potential benefits of such mind-body practices. Sport psychology as a field, particularly in relation to mindfulness-related advancements, could benefit from a closer examination of Chan and Shaolin martial arts practices. After all, Shaolin martial arts features mindful movements dominantly and further research would provide a better understanding of how mindfulness can be practised whilst in action to enhance human performance, both physically and psychologically. For instance, the three stages of development described in Chan and Shaolin martial

arts practices could provide some ideas for re-conceptualising the penultimate states of motor skill acquisition and performance. A better understanding of peak performance and flow in sport may also be realised, given that Chan practices may predispose individuals to develop a relaxed yet firm "non-striving" attitude that may be conducive to peak performance and flow.

Clearly, some of the articulations in this paper remain largely as conjectures awaiting further empirical verification. Nevertheless, it is clear that there is certainly scope for exploring the quality and benefits of Chan or Zen mind which could serve to advance sport psychology. For instance, emerging neuroimaging works have showed that Chan or Zen-like mind has a distinctive characteristics that are worthy of investigating given its adaptability (e.g., Austin, 1998 [108]; Austin, 2013 [53]). Hopefully, the current deliberations offer the international sport psychology community with a worthy glimpse of the Eastern origins of mindfulness, specifically on Shaolin martial arts and related practices, and supports further advancement of sport psychology.

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