Giornale Italiano di Educazione alla Salute, Sport e Didattica Inclusiva / Italian Journal of Health Education, Sports and Inclusive Didactics - Anno 6 n. 1 - ISSN 2532-3296 ISBN 978-88-6022-436-1 - gennaio - marzo 2022 - CC BY-NC-ND 3.0 IT- https://doi.org/10.32043/gsd.v6i1.533

MINDFULNESS AND MINDFUL MOVEMENT: PRACTICES FOR THE IMPROVEMENT OF COGNITIVE FUNCTIONING

MINDFULNESS E MINDFUL MOVEMENT: PRATICHE PER IL MIGLIORAMENTO DEL FUNZIONAMENTO COGNITIVO

Patrizia Belfiore
Università degli Studi di Napoli "Parthenope"
Patrizia.belfiore@uniparthneope.it

Abstract

Mindfulness is a contemplative practice based on fundamental principles of acceptance aimed at training the attention and awareness of one's physical and mental state through regular meditation. It is in this scenario that a new category of physical activity called "mindful movement" fits, which encompasses all the motor practices that emphasize the awareness of the body and the movements it produces, using the breath as a vehicle for achieving deep states of relaxation.
Due to the development of motor sciences, neuroscience and cognitive psychology, physical activity has become increasingly important for the promotion of health and well-being. Practicing Mindful movement might improve cognitive functioning, regardless of the improvement in cardiovascular functioning induced by aerobic exercise.

Abstract

La *Mindfulness* è una pratica contemplativa che serve ad allenare l'attenzione e la consapevolezza del proprio stato fisico e mentale attraverso una meditazione regolare, basata su alcuni princìpi chiave di accettazione. È in questo scenario che si inserisce una nuova categoria di attività fisica chiamata "movimento consapevole", che comprende tutte le pratiche motorie che enfatizzano la consapevolezza del corpo e dei movimenti che produce, utilizzando il respiro come veicolo per raggiungere stati profondi di rilassamento. Con lo sviluppo delle scienze motorie, delle neuroscienze e della psicologia cognitiva, l'attività fisica è diventata sempre più importante per la promozione della salute e del benessere. Praticare Mindful movement potrebbe migliorare il funzionamento cognitivo, indipendentemente dal miglioramento del funzionamento cardiovascolare indotto dall'esercizio aerobico.

Keywords
Mindfulness, physical activity, cognitive functioning
Mindfulness, attività motoria, funzionamento cognitivo

Introduction

Mindfulness is a contemplative practice based on fundamental principles of acceptance aimed at training the attention and awareness of one's physical and mental state through regular meditation (Bishop, 2004). Mindfulness derives from the Pali word *sati*, used by Buddhist psychology 2500 years ago. Also, it is worth mentioning that the origins of this practice are traceable, with different names, in broad regions ranging from China to Greece. Mindfulness's mainstems are the critical principles of awareness of the present and non-judgmental acceptance of emotional states (Jha et al., 2007).

Different definitions have been proposed for this particular practice over the years: Buddhist teacher Thich Naht Hanh describes Mindfulness as "Awareness is keeping consciousness alive in the reality of the present" (Naht Hanh, 1975), thus bringing Spanish culture closer to that of Buddhism. Moreover, Kabat-Zinn describes Mindfulness as the way to "pay focused attention with intention, at the present moment, in a non-judgmental way" (Kabat-Zinn, 1990), where "focused" means the ability to choose an object, whatever it is, and exclusively pay attention to it. Furthermore, the analyzed item might be breathing, a body sensation, a feeling or a purpose, etc. Whenever it could be realized that the mind begins to wander and has lost focus attentively, it is essential to intentionally, gently and without judgment, refocus (Damasio, 1999; Dallari, 2000; Tarozzi & Francesconi, 2012).

Kabat-Zinn, which might be considered the founder of Mindfulness practice, firstly had the idea to create a training program based on Mindfulness techniques in different hospitals and clinics to help reduce patients' stress levels.

According to Kabat-Zinn, "turned to the present moment" can be defined as the process in which attention has been paid exclusively to the experience that is being lived, here and now. Also, "non-categorizing" attention is open to circumstances without categories, classifications, and judgments usually used to evaluate everyday situations.

Moreover, Kotsou defines Mindfulness as a state of full consciousness achieved through concentration on the present moment, which is the only moment that exists. Such a state is also defined as "full consciousness meditation" (Kotsou I, 2019).

Generally, people are affected by "chronic unawareness," they experience life without being aware of it. Probably, it is due to the brain's ability to bring one's mind away from the present. Also, automatic and unconscious attitudes are particularly stressful when inconveniencing daily life.

This results in people's inability to enjoy life; they often work mechanically and automatically without being completely aware of what happens inside and outside. Nevertheless, Mindfulness practice might have essential effects on the quality of life, training people to full awareness.

Step by step, people will be able to actively concentrate without distraction and be deeply connected with all senses and the emotional level (Kotsou I, 2019).

The term "meditation" can evoke different emotions ranging from the fascination of discovery to the fear of an unknown situation (Varela, 1992; Tang, 2015). The term meditation refers to very different conditions such as relaxation and concentration or on to an object or a word able to detach from any other symbol or phenomenon of trance or mystical experiences. Instead, Mindfulness meditation might be considered the opposite direction (Amadei, 2013). Mindfulness's experience means anchoring in the knowledge of the body, sensations, mental objects, and the mind to be fully self-conscious. Two essential practices are crucial in Mindfulness meditation: mindful awareness and mindful practice.

Mindful awareness is the awareness of awareness, the deepest and fully self-consciousness. Indeed, every attitude aims to understand one's emotional state at the moment in which one lives. Therefore, Mindfulness is a state of mind that allows appropriating the body, mind, and experience moment by moment (Brown et al., 2007). Practicing intention, attention, and attitude, Mindfulness allows the whole experience of every moment in life, leading to applying Mindfulness intentionally and place and sustain attention and strengthen oneself (Shapiro & Carlson, 2012).

1. Mindfulness: pillars and benefits

Mindfulness has seven fundamental principles, called "the seven pillars," essential during Mindfulness. These are briefly described in the following paragraphs.

- **Not judgment**: Generally, judgment is consistent with one's values and beliefs. It is primarily an automatic process in which the mind focuses on evaluating the experiences and thoughts rather than finding an inner balance. It all happens automatically, so we have to realize when that happens and try to remain impartial without acting and getting involved in those judgmental thoughts. If a boring situation occurs, a Mindfulness attitude should be focused on the emotion rather than its judgment (Kabat-Zinn, 1985).
- **Patience**: the principle of patience has its essential assessment in accepting and understanding that things happen in due time. Therefore, Mindfulness helps practice patience using the body and mind as its primary tools (Kabat-Zinn, 1985).
- **Beginner's Mind**: In this practice, everything is seen as a new chance and a challenging opportunity that somehow differs from the past ones, therefore being a crucial tool to avoid daily routine (Kabat- Zinn, 1985).
- **Trust**: this attitude helps develop self-awareness and self-confidence through deep listening to the body's sensations and feelings. (Kabat-Zinn, 1985).
- **Do not look for results**: This practice is focused on living here and now, being utterly committed to the present situation (Kabat- Zinn, 1985).
- **Acceptance**: Acceptance is not resignation. Moreover, it is the ability to eventually accept unpleasant situations and watch them as they are (Kabat-Zinn, 1985).
- **Let go**: Unfortunately, unpleasant or painful experiences occur in everyday life. Often, there is no chance to dismiss and accept them might be the only way to manage them. (Kabat-Zinn, 1985).

Based on these assumptions, several authors tried to assess the reasons for practicing Mindfulness. Amadei (2013) argues that there are two possible explanations: the first is based on empirical, scientific, and objective principles, while the second investigates the question in a philosophical, existential, and subjective manner. Nevertheless, these two paths are strictly bound to each.

Moreover, Mindfulness practice has benefic effects on both physical and mental well-being. Furthermore, studies supporting the benefits of Mindfulness specifically emphasized the following aspects:

- Improvement of attention, concentration, and empathy, as well as self-management of negative emotions and active listening (Goleman, 2017);
- Decrease of anxiety and stress levels as well as a better ability to manage symptoms (Kabat-Zinn, 1990);
- Positive feedback in terms of quality of life, satisfaction, and well-being (Jayawickreme et al 2012);
- Improvement in peer acceptance (Schonert-Reichl et al., 2015);
- Improvement in alertness increased the ability to maintain and direct attention (Jha et al., 2007);
- Improvement in academic and school performances (Schonert- Reichl et al., 2015);
- Decrease in behavioral problems (Perez Fuentez et al., 2020; Schonert-Reichl et al., 2015);
- Development of creativity (Chambers R et al, 2009);

- Promotion of emotional regulation and positive affection (Chambers R et al., 2009);
- Improvement in sleep habits (Chambers R et al., 2009).

Moreover, studies evaluating Mindfulness practice in children and young adults are currently available. Although pilot studies enroll small samples, they provide helpful insight for future investigations (Brocki, 2004; Fischer, 2007). They demonstrate an improvement in concentration and school performance and decreased anxiety and stress levels. Positive attitudes in terms of less reactivity to negative stimuli or social relations, greater compassion, and self-esteem have also been demonstrated (Amadei, 2013; Van der Fels, 2015).

Mindfulness practice in pediatric age and adults comprises common principles and habits: sessions are organized in groups but are differentiated and tailored to the target. For example, if played with children, the activities have a game suit and shorter time (Amadei, 2013).

2. Mindful movement

Mindfulness practice can be classified into formal and informal. Formal Mindfulness might be defined as the exercise of techniques such as Body Scan Meditation (a meditation practice carried out in a supine position), Gentle Hatha Yoga (a practice that concerns body awareness), Sitting Meditation, a technique that focuses on the breath, body sensations, thoughts, emotions, and feelings; Walking Meditation or "the conscious walk." On the other hand, the informal practice involves formal Mindfulness training in everyday life during the day (Shapiro & Carlson, 2003). Mindful movement (also called meditative movement or mind-body training) is one of the most common practices in formal Mindfulness. It refers to a new physical activity that emphasizes body awareness and movement. The breath is the primary tool of this technique, and it is used to achieve deep states of relaxation (Larkey et al., 2009).

As meditative practices focus on a specific image, a mantra, or the breath, mind-body techniques replace these ideal principles with movement (Ceciliani & Tafuri, 2017). Therefore, practitioners are perfectly self-conscious as well aware of their surroundings. Generally, exercises are performed slowly and fluidly, even if they vary from static postures, as happens in yoga, to a wide range of quick movements, as in aikido (Pesce et al., 2016).

Mindful movement practices and physical activity have recently been related to cognitive functions that might be improved regardless of those induced by aerobic exercise in cardiovascular functions. From 1980 onward, physical activity, exercise, sports practice, neuroscience, and cognitive psychology, have become increasingly important for health promotion and well-being (Chandler, 2015; Smallwood, 2011). Moreover, exercise regularly helps prevent and treat mental disabling clinical conditions in different groups of people. Several studies provided evidence of the involvement of long-term physical practice in the development of cognitive functioning in children and in reducing the diagnosis of neurodevelopmental and neurodegenerative diseases (ADHD, autism, Parkinson's, Alzheimer's). Moreover, positive effects of physical activity and exercise have been demonstrated in the treatment of different psychological, psychiatric, and neurological conditions and in delaying age-related cognitive impairment.

In the last decade, several studies aimed to assess the effects of cardiovascular training (a type of exercise characterized primarily by different levels of aerobic exertion) on brain morphology and cognitive-behavioral functioning (Pesce & Ben-Soussan, 2014). Moreover, Lubans and coworkers demonstrated that mediation improves neurotrophins and cognitive performance at the same level as those induced by physical activity. (Lubans et al., 2012).

However, practicing physical activity has been shown to induce structural and functional changes in the brain (Pesce et al., 2013). Therefore, Mindful movement perfectly fits this scenario. Different mindfulness protocols have been developed over the years and are listed and detailed in table 1.

Type of protocol	Description
Mindfulness based stress reduction (MBSR; Kabat-Zinn, 2011)	Mindfulness based Stress Reduction is a person-centered, experiential, educational intervention for people who want to live life more fully and adapted. Key factors are mindfulness training, non-judgment, patience, beginner's mind, confidence, not seeking results, acceptance, and letting go. The protocol includes meditations focused on the awareness of the present moment with an attitude of non-reactivity and non-judgment. Participants practice different types of meditation, such as hata yoga, body scan and sitting meditation during 8 weekly meetings and between meetings. There is also a psychoeducational part on stress and its mechanisms, which is integrated with informal practices, aimed at bringing attention to physical sensations, emotions, thoughts and attitudes in everyday life situations
Mindfulness-bases cognitive therapy (MBCT; Segal et al., 2002)	It is a manualized path, designed to reduce depressive relapses. It aims to help patients recognize negative thoughts, feelings, attitudes and somatic sensations and to distance themselves from them in order to prevent relapses. There will be 8 weekly meetings in small groups of two hours and formal and informal practices between one meeting and another
Dialectical Behavioral Therapy (DBT) modified for Attention Deficit Hyperactivity Disorder (ADHD) (Philipsen et al., 2007)	It is a 13-week, homework intervention conducted in groups to help participants control ADHD symptoms and modify maladaptive thoughts. Mindfulness skills are practiced daily. Other topics addressed during the course are the control of chaos, the analysis of dysfunctional behaviors, the regulation of emotions, depression and ADHD therapies; impulse control, stress management, abuse and addiction, self-respect, relationships, repetitive and prospective analysis.
Less stress with mindfulness (Paulik et al., 2010)	The group intervention of 12 weekly meetings of two hours each integrates strategies derived from MBSR, MBCT and DBT. Participants learn about stress, state of mind, mindfulness skills, radical acceptance, problem solving strategies, thinking and illness,

	and mindful approach to relapse prevention. Mindfulness practice is provided in each session.
Modified mindfulness training for ADHD (Zylowska et al., 2008)	Eight weekly group sessions with daily practice at home adapted from mindfulness training (Kabat-Zinn, 1990; Segal et al., 2002). Psychoeducation on ADHD (symptoms, causes). Sitting meditation and walking are presented and mindful awareness in everyday life is highlighted. Loving kindness meditation (wishing oneself and others well) is also practiced in order to reduce the aspects of low self-esteem associated with ADHD
Acceptance and mindfulness-based group therapy for social anxiety disorder (MAGT; Kocowski et al., 2009)	Twelve two-hour group sessions with one follow up after three months, MAGT is a set of mindfulness, acceptance, and exposure strategies. Negative variables (negative self-imagery, and self-focused attention) are identified, and mindfulness exercises (such as mountain exercise) are practiced during group sessions
Mindfulness-based Chronic Pain Management (MBCPM, Gardner-Nix et al., 2008)	The intervention includes 10 meetings of 2 hours each, individual, or group, or group via teleconference. Participants are encouraged to bring awareness about the intensity, quality of their pain and the emotions and thoughts associated with it. Meditations with visualizations of the painful parts of the body are also planned. Yoga is replaced by conscious slow movements and postures adapted to the physical condition of the participants.
Mindfulness based movement (Larkey, 2009)	The MBM places emphasis primarily on movement through yoga to cultivate awareness and promote the union between body, mind and spirit by combining movement with breath control and meditation. From a methodological point of view, it provides 2 group sessions, for a duration of 90 minutes, for 8 weeks. After the third week there is a Hata Yoga course.

Table 1. Type of protocol of Mindfulness

3. Effects of Mindfulness practice on cognitive functions

Several empirical studies described the impact of mindfulness practice and Mindful movement on health promotion and prevention of certain pathologies. In 2015, Walsh and coworkers reported better cognitive performances in elderly subjects who practiced Tai Chi in an observational study compared to age-matched sedentary subjects.

Previously, Hofmann et al. had demonstrated that physically active subjects develop a faster and more accurate motor response to specific sensory stimuli than their sedentary counterpart (Hofmann et al., 2010).

Moreover, inhibitory control, cognitive flexibility, working memory, creativity, and information processing are additional cognitive functions that are improved as a result of both single sessions and long periods of mind-body training (Carmody et al., 2008; Hillman et al., 2016). Preliminary evidence suggests a first involvement of the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis (HPA). Therefore, mindfulness movement might be a valuable tool in reducing stress levels and increasing the ability to manage, with a consequent reduction of sympathetic and HPA systems activation, and consequently anxiety, depression, and cognitive deterioration (Hillman et al., 2016). Also, mind-body training is likely to improve cognitive functions by increasing inter-and intra-hemispherical neuronal synchronization, especially in the frontal and fronto-cerebellar areas of the brain. Finally, a recent study demonstrated increased synapses, neurotrophins, and cerebellar gray matter, probably due to the attentional process (Pesce & Ben-Soussan, 2014).

Attention's role in defining all meditative "movements" is crucial in terms of functions and areas of the brain. Therefore, mindfulness could be considered a general component of attention or a different way in which attention is manifested. The process by which mindfulness occurs was proposed by Malinowski in 2013 and is shown in figure 1.

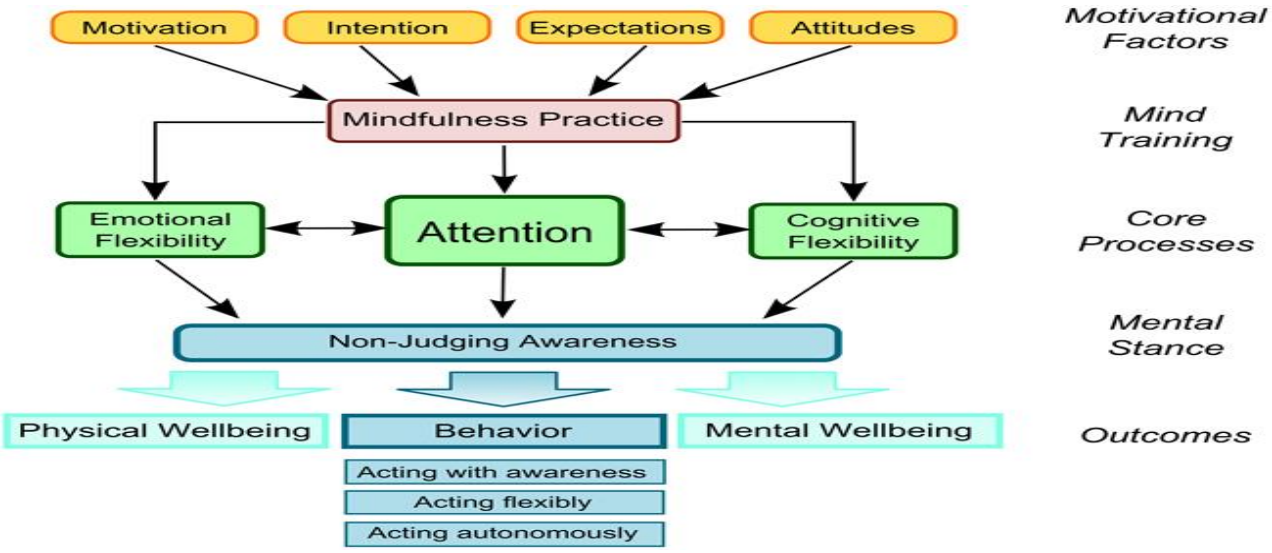

Figure 1. Mindfulness-Liverpool Mindfulness Model (Malinowski, 2013).

According to this model, Mindfulness practice is a core process whose main target is achieved thanks to a motivational process (motivational factors). Different physical and mental outcomes might be produced in response to a central process, mainly sustained attention and attentional control. Consistent with Schmertz and coworkers (Schmertz, Anderson, Robins, 2008) are the results by Conners (Conners, 2000) and Moore and Malinowski (2009). In the enrolled subjects, a mindfulness state was associated with increased performance measured by the Continous Performance Test (Conners, 2000), a test frequently used to evaluate sustained attention. Moore and Malinowski applied a similar methodology and obtained consistent results were obtained by). Nevertheless, they assess how experienced "meditators" perform better than non-practitioners in sustained attention tasks (Chiesa & Malinowski, 2011).

In this context, it's worth mentioning the pivotal study by Allen and coworkers (Allen et al., 2012). These authors, using fMRI, investigated the neural modifications involved in cognitive and emotional processing resulting from six weeks of mindfulness training. The sample enrolled comprises 30 healthy subjects in the experimental group and 30 in the control group. Both groups were aged 18 to 50 years. The Stroop test demonstrated that the scores referred to interference decreased in the meditation group but not in the control group. This was related to a functional increase in the activation of the dorsolateral prefrontal cortex (Clark, 2008). Some recent studies state that meditation training can change the morphology of the brain and improve the abilities of the same, particularly in areas related to attention and the selection of responses. Long-term meditation was once associated with increasing cortical thickness (Chiesa et al., 2013). Currently attention is associated with the frontal cortex and the areas close to it. Areas that show an increase in gray matter within the left hippocampus, posterior cingulate cortex, and cerebellum are identified in a study analyzing the effects of mindfulness over an 8-week time frame (Tononi et al., 1998). There are two categories within meditative practices: focused meditative attention (AF), which involves focusing meditation on a specific object, such as breathing; open meditation (OM), which involves monitoring the experience at any time of the day. Those who practice meditation regularly often have different levels of expertise in both categories. Studies have shown that meditative practices are among the most efficient methodologies in increasing emotional balance, through the regulation of attention to certain emotions (Taren et al., 2017; Toro & Serafinelli, 2014). Attention is one of the most precious tools we use, like a telescope, to select, draw attention and amplify the stimuli coming from the surrounding reality. Without the ability to use attention as a tool to refine specific aspects of our experience, we would get lost among the countless superfluous information that flows into our brains. Therefore, sensory, emotional and mental information is filtered and analyzed through the various processes involving attention, which can be regulated automatically, but also consciously. The environment in which we live can naturally shape our experiences in a positive or negative sense. From this it can be deduced that the more or less developed ability of an individual to influence his own intellectual processes can determine his consequent emotional experiences and his lines of behavior ((Marois et al., 2005; Kocovski, 2013). Clearly there are individual differences in the ability to regulate one's attention, but recent studies have shown that this can be increased through frequent meditation practice. If attention can be trained, then it can actively guide the regulation of individual emotional processes and consequently behavior, promoting, ultimately, the psycho-physical well-being of each subject (Jha, 2007). This means that the human being is able to learn how to select certain types of emotions, in order to optimize their emotional experiences. The goal of this regulatory process is not only to increase positive emotions at the expense of negative ones, but also, depending on the external context, to regulate the desire to trigger negative emotions and stop the flow of positive ones (Francesconi D. a,b, 2011). Therefore, the oscillation between positive and negative conditions could be crucial in defining efficient emotional control. In support of this, several studies have shown that maintaining a high level of positive feelings compared to negative ones leads to an ideal functioning of the individual's emotional system (Kocovski, 2013; Molinowski, 2012; Montano, 2016; Chambers, 2009). Through meditative practices individuals learn to concentrate selectively and for a prolonged time on a given element, such as their own breath, or a sound or, again, on a visual stimulus. When attention shifts from the object of concentration, the individual frees himself from the distraction presented to him by another external body and brings his attention back to the element at the center of the meditative process (Philipsen, 2007). The latter teaches, therefore, to direct attention towards certain emotions and on the effects of given feelings. For example,

meditating on positive emotional experiences can prolong the actual benefits of the same, causing well-being in the subject. However, meditating excessively on both negative and positive feelings can lead to a psycho-physical imbalance, so even meditative practice must be carried out with the awareness of the effects to which it inevitably leads (Ganushchak, 2008).

Conclusions

Mindfulness is a meditative practice that interacts with numerous components of the "human system" (Kabat-Zinn, 2003). We know that it interacts profoundly on our attentional abilities, so much so that it could rightly be considered a very modality of the attentional system. Mindfulness is a technique that allows introspective and perceptual awareness, promoting awareness towards our psychological processes and habits. It increases interhemispheric communication, which is typical of states of creativity, since the individual who meditates is able to perceive increasingly subtle details of the stream of consciousness and mental processes (Amadei, 2013). The inclusion of moving practices in meditation interventions allows you to walk the path that leads to greater awareness and conscious presence since no element of human nature is neglected. Listen, observe and pay attention to your thoughts, your feelings, emotions, parts of your body (Larkey, 2009). A body that is and that is, that breathes sitting but also that moves without necessarily having to go somewhere or having to do something. The cognitive part, the emotional part, the sensory, perceptual part and the more purely physical and motor part are called to take part in awareness training. Mindfulness on the move also has the characteristic of being able to be an effective foothold for beginners who can find in yoga exercises or conscious walking recognizable elements closer to their life habits (Pesce et al., 2013). Going to the gym or walking are activities that are part of everyday life and therefore there may be less resistance in carrying out this type of practices and then opening up to their new meanings and new potential. When mindfulness meets school it determines a change of perspective, the way of thinking about the mind and the skills necessary to be a competent citizen change and the practices and "being" mindfulness seem to pick up this need (Lubans et al., 2012). Competence, with mindfulness, becomes awareness of being and of others, it becomes the ability to understand one's own judgmental limits, it becomes taking a space to understand oneself and one's body so that one can also understand what happens in the perspective of others.

References

Allen, M., Dietz, M., Blair, K. S., Van Beek, M., Rees, G., Vestergaard-Poulsen, P., et al. (2012). Cognitive-affective neural plasticity following active-controlled mindfulness intervention. J. Neurosci. 32, 15601–15610

Amadei G. (2013). Mindfulness. Essere consapevoli. Il Mulino

Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. Clinical psychology: Science and practice, 10(2), 125-143.

Bishop, S. R., Lau, M. A., Shapiro, S. L., Carlson, L. E., Anderson, N. D., Carmody, J., et al. (2004). Mindfulness: a proposed operational definition. Clin. Psychol. Sci. Pract. 11, 230–242

Brocki, K. C., & Bohlin, G. (2004). Executive functions in children aged 6 to 13: A dimensional and developmental study. Developmental neuropsychology, 26(2), 571-593.

Brown, K. W., Ryan, R. M., and Creswell, J. D. (2007). Mindfulness: theoretical foundations and evidence for its salutary effects. Psychol. Inq. 18, 211–237

Carmody J. & Baer R.A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. Journal of Behavioral Medicine, 31: 23-33. DOI: 10.1007 / s10865-007-9130-7

Ceciliani, A., & Tafuri, D. (2017). Embodied Cognition in Physical Activity and Sport Science, in: Embodied Cognition. Theories and Applications in Education Science. New York: Nova Science Publisher

Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. Clinical Psychology Review, 29, 560-572.

Chandler, P. & Tricot, A. (Eds.) (2015). Human movement, physical and mental health, and learning. Educational Psychology Review, 27(3), 371-389.

Chiesa, A., and Malinowski, P. (2011). Mindfulness based interventions: are they all the same? J. Clin. Psychol. 67, 404–424

Chiesa, A., Serretti, A., & Jakobsen, J. C. (2013). Mindfulness: Top–down or bottom–up emotion regulation strategy? Clinical Psychology Review, 33(1), 82–96.

Clark A. (2008). Supersizing the Mind: Embodiment, Action, and Cognitive Extension, Oxford: Oxford University Press

Conners, C. K. (2000). Conners' Continuous Performance Test user's manual. Toronto, Canada: Multi-Health Systems.

Dallari M. (2000). I saperi e l'identità. Costruzione delle conoscenze e della conoscenza di sé. Milano: Guerini

Damasio A. R. (1999). Emozione e coscienza. Milano: Adelphi

Depraz N., Varela F. J., Vermersch P. (2003). On Becoming Aware: A pragmatics of experiencing Philadelphia: John Benjamins B.V

Fischer K. W., Daniel D., Immordino-Yang M. H., Stern E., Battro A., Koizumi H. (2007). Why Mind, Brain, and Education? Why Now? Mind, Brain, and Education, 1(1), 1-2.

Francesconi, D. (2011a). Pedagogia e neuroscienze cognitive in dialogo. L'esempio dell'esperienza corporea. Formazione e insegnamento, IX(I), 179-184

Francesconi, D. (2011b). Implicit and Explicit Learning in Motor Cognition. Issues for movement educa- tion. The International Journal of Sport and Society, 2(1), 1-8.

Francesconi, D., & Tarozzi, M. (2012). Embodied Education. A Convergence of Phenomenological Peda- gogy and Embodiment. Studia Phaenomenologica, XII, 263-288.

Ganushchak, L. Y., and Schiller, N. O. (2008). Motivation and semantic context affect brain error-monitoring activity: an event-related brain potentials study. Neuroimage 39, 395–405

Gardner-Nix J, Backman S, Barbati J, Grummitt J. (2008). Evaluating distance education of a mindfulness-based meditation programme for chronic pain management. J Telemed Telecare. 14(2):88-92

Gardner, H. (1987). Formae mentis. Saggio sulla pluralità dell'intelligenza. Feltrinelli: Milano

Goleman, D. (2017). Mindfulness. HBR emotional intelligence series. Harward Business Review

Hillman, Charles H et al. (2016). "On mindful and mindless physical activity and executive function: A response to Diamond and Ling" Developmental cognitive neuroscience vol. 37

Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. Journal of consulting and clinical psychology, 78(2), 169

Jayawickreme E, Forgeard MJC, Seligman MEP. (2012). The Engine of Well-Being. Review of General Psychology. 16(4):327-342

Jha AP, Krompinger J, Baime MJ. (2007). Mindfulness training modifies subsystems of attention. Cogn Affect Behav Neurosci. 7(2):109-19. doi: 10.3758/cabn.7.2.109. PMID: 17672382.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. Clin. Psychol. Sci. Pract. 10, 144–156

Kabat-Zinn, J. (2011). Some reflections on the origins of MBSR, skillful means, and the trouble with maps. Contemp. Buddh. Interdiscipl. J. 12, 281–30

Kabat-Zinn, J., Lipworth, L., and Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. J. Behav. Med. 8, 163–190

Kocovski NL, Fleming JE, Hawley LL, Huta V, Antony MM. Mindfulness and acceptance-based group therapy versus traditional cognitive behavioral group therapy for social anxiety disorder: a randomized controlled trial. Behav Res Ther. 2013 Dec;51(12):889-98

Kotsou I, Mikolajczak M, Heeren A, Grégoire J, Leys C. (2019) Improving Emotional Intelligence: A Systematic Review of Existing Work and Future Challenges. Emotion Review

Larkey, L., Jahnke, R., Etnier, J., Gonzalez, J. (2009). Meditative Movement as a Category of Exercise: Implications for Research. Journal of Physical Activity and Health, 2009, 6, 230-238

Lubans DR, Plotnikoff RC, Lubans NJ. A systematic review of the impact of physical activity programmes on social and emotional well-being in at-risk youth. J Child Adolesc Ment Health. 2012;17(1):2–13

Malinowski, P. (2012). "Wirkmechanismen der Achtsamkeitspraxis. Wie fördert Meditation positive psychologische Veränderungen? [Mechanisms of mindfulness. How meditation fosters positive psychological change]," in Achtsamkeit: Ein buddhistisches Konzept erobert die Wissenschaft [Mindfulness: A Buddhist concept conquers science], eds M. Zimmermann, C. Spitz, and S. Schmidt (Berlin: Hans Huber), 91–100

Malinowski, P. (2013). "Flourishing through meditation and mindfulness," in Oxford Handbook of Happiness, eds S. David, I. Boniwell, and A. Conley Ayers (Oxford: Oxford University Press), 384–396

Marois, R., and Ivanoff, J. (2005). Capacity limits of information processing in the brain. Trends Cogn. Sci. 9, 296–305

Montano, A., Villani, S., & Civilini, B. (2016). Programma mindfulness «il fiore dentro». Per insegnare ai bambini a gestire lo stress ed essere più felici. Eclipsi (Firenze).

Nath Hanh, T. (2003). Un guijarro en el bolsillo. El budismo explicado a los niños. Barcelona:Oniro.

Paulik, G., Simcocks, A., Weiss, L. et al. Benefits of a 12-Week Mindfulness Group Program for Mental Health Consumers in an Outpatient Setting. Mindfulness 1, 215–226 (2010).

Pérez-Fuentes, M.d.C.; Molero Jurado, M.d.M.; Mercader Rubio, I.; Soriano Sánchez, J.G.; Gázquez Linares, J.J. (2020). Mindfulness for Preventing Psychosocial Risks in the Workplace: A Systematic Review and Meta-Analysis. Appl. Sci

Pesce C., Marchetti R., Motta A., & Bellucci M. (2015). Joy of moving. Movimento e immaginazione. Perugia: Calzetti Mariucci Editori

Pesce, C., Faigenbaum, A., Corva C., Marchetti, R., & Bellucci, M. (2013). Benefits of multi-sports physical education in the elementary school context. Health Education Journal, 72, 326-33

Pesce, C., Masci, I., Marchetti R., Vazou S., Sääkslahti A., & Tomporowsk P.D. (2016). Deliberate Play and Preparation Jointly Benefit Motor and Cognitive Development: Mediated and Moderated. Effects. Frontiers in Psychology, 7 (349), 1-18

Philipsen A, Richter H, Peters J, Alm B, Sobanski E, Colla M, Münzebrock M, Scheel C, Jacob C, Perlov E, van Elst LT. (2007). Structured group psychotherapy in adults with attention deficit

hyperactivity disorder: results of an open multicentre study. The Journal of nervous and mental disease. 195(12)

Schmertz, Stefan K., Page L. Anderson, and Diana L. Robins. (2009). The relation between self-report mindfulness and performance on tasks of sustained attention. Journal of Psychopathology and Behavioral Assessment 31.1 60-66

Schonert-Reichl, Kimberly & Oberle, Eva & Lawlor et al. (2015). Enhancing Cognitive and Social-Emotional Development Through a Simple-to-Administer Mindfulness-Based School Program for Elementary School Children: A Randomized Controlled Trial. Developmental psychology

Segal, Z., Teasdale, J. Williams, M. and Gemar, MC. (2002). The Mindfulness-Based Cognitive Therapy Adherence Scale: Inter-rater Reliability, Adherence to Protocol and Treatment Distinctiveness. Clinical Psychology and PsychotherapyClin. Psychol. Psychother.9, 131 – 138

Shapiro, S.L., Bootzin, R.R., Figueredo, A.J., Lopez, A.M., & Schwartz, G.E. (2003). The efficacy of mindfulnessbased stress reduction in the treatment of sleep disturbance in women with breast cancer. An exploratory study. Journal of Psychosomatic Research, 54, 85–91

Smallwood, J., Mrazek, M. D., & Schooler, J. W. (2011). Medicine for the wandering mind: mind wandering in medical practice. Medical education, 45(11), 1072-1080

Tang, Y. Y., Hölzel, B. K., & Posner, M. I. (2015). The neuroscience of mindfulness meditation. Nature Reviews Neuroscience, 16(4), 213-225

Taren, A. A., Gianaros, P. J., Greco, C. M., Lindsay, E. K., Fairgrieve, A., Brown, K. W., ... & Creswell, J. D. (2017). Mindfulness meditation training and executive control network resting state functional connectivity: A randomized controlled trial. Psychosomatic Medicine, 79(6), 674-683

Tarozzi, M., & Francesconi, D. (2012). Per un'embodied education fenomenologicamente fondata. Ency- clopaideia, XVII (37), 11-17

Tononi G., Edelman G. M. (1998). Consciousness and complexity.(1991). Science, 282 (5395), 1846-1851. Varela F.J., Thompson E., Rosch E. The Embodied Mind. Cognitive Science and Human Experience. Cambridge

Toro M.B. & Serafinelli S. (2014). Comprendere e sostenere le relazioni: il contributo della mindfulness interpersonale. Modelli per la Mente, 4(1): 15-22

Van der Fels, I.M.J., Te Wierike, S.C.M., Hartman, E., Elferink-Gemser, M.T., Smith J., & Visscher, C. (2015). The relationship between motor skills and cognitive skills in 4-16 years old typically developing children: a systematic review. Journal of Sciences and Medicine in Sport, 18, 697-703

Varela F. J. (1996). Neurophenomenology: a Methodological Remedy to the Hard Problem. Journal of Consciousness Studies, 3, 330-350

Walsh, J. N., Manor, B., Hausdorff, J., Novak, V., Lipsitz, L., Gow, B., Macklin, E. A., Peng, C. K., & Wayne, P. M. (2015). Impact of Short- and Long-term Tai Chi Mind-Body Exercise Training on Cognitive Function in Healthy Adults: Results From a Hybrid Observational Study and Randomized Trial. Global advances in health and medicine, 4(4), 38–48

Zylowska L, Ackerman DL, Yang MH, et al. (2008). Mindfulness Meditation Training in Adults and Adolescents With ADHD: A Feasibility Study. Journal of Attention Disorders. 11(6):737-746