

# How cultivate internal resources to improve physical and brain health

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**Abstract.** Our mind can be used in positive way, it is powerful, and the neuroplasticity, typical of our brain, allows to our mind to change if our behaviour and our reactions change. When we become aware that our behaviour and reactions can change, neuroplasticity modifications can be relevant and they can influence our emotional and physical health, and pain perception. In the last 25 years ago many reports on different roles of emotions on our brain and physical health have been published, due to the work of Her Holiness the Dalai Lama and a group of neuroscientists, demonstrating how our brain health can influence brain circuits involved in pain perception, anxiety, and physical health. J Kabat Zinn was the pioneer in this field, taking to the West the meditation practice, finding out that it had many clinical applications. His work by cultivating mind was a precious support and a good starting point: freeing mind from conditioning, rumination and judgment is a powerful resource to find adequate solutions in some critical situations and to cultivate kindness and generosity. Mindfulness is an important alternative to take care of us and of patients, improving the results obtained from pharmacological therapies when we treat pain or other pathological conditions. The combination between western and eastern disciplines has never been more adequate and important for our physical and brain health.

**Key words:** Mental Health, Brain Health, Mindfulness, Awareness, Neuroplasticity

## Introduction

It is not so usual for all of us to stop for a moment and to focus our attention on what we are doing: we always have many things to do, to plan, spending our time with many worries about life, about job, and about our relationships.

We use our mind, a powerful and highly sophisticated network, but we do not explore many of its important abilities, a part from planning, worrying and ruminating....

*"Be in the present moment, without any judgment, concentrated on the present"* J Kabat Zinn said in the eighties when he realized how much helpful the practice of meditation for clinical applications while he was working as clinician in Boston MA (1, 2).

Our mind can be used in positive way, it is powerful, and the neuroplasticity, typical of our brain, allows to our mind to change if our behaviour and our reactions change.

When we become aware that our behaviour and reactions can change, neuroplasticity modifications can be relevant and they can influence our emotional and physical health, and pain perception (1-3).

## The MIND & LIFE institute constitution

*The MIND & LIFE Institute* is a very important reality where most famous researchers and scientists working on the "mind science" are involved in different research programs concerning mind and behaviour. The activity of this group of scientists, inspired by the big

personality of Her Holiness the Dalai Lama started almost 25 years ago and from that time many reports on different roles of emotions on our brain and mind health have been published, demonstrating how our mental health has influence on brain circuits involved in pain perception, anxiety, and physical health (4). Her Holiness the Dalai Lama, inspired from the buddhist religion, contributed to expand the thinking of the Buddha and the ancient buddhism tradition all around the world by demonstrating how the teaching of the Buddha can be translated into our world also for clinical purpose (4).

*MIND & LIFE Institute* started its activity almost 20 years ago, thanks to the activity of Her Holiness the Dalai Lama and of a group of scientists R Davidson, J Kabat Zinn, D Goleman, P Wallace: almost one year ago an important meeting was held during which Her Holiness The Dalai Lama and scientists involved in field of meditation and mental health have discussed about how mental aspects may contribute to our health. (4-6).

It has been surprising to note how much the thinking of the Buddha and the ancient buddhism tradition, although they are 2000 years old, fit perfectly in the modern world, especially in this crucial period, resulting universally adequate and applicable for all of us and to improve our mental and physical health (1,2).

### **The Mindfulness Based Stress Reduction program: The clinical practice**

J Kabat Zinn was the pioneer in this field, taking to the West the meditation practice finding out that it had many clinical applications.

He transferred his knowledge into clinical practice, organizing specific protocols for patients with stress disorders and anxiety problems, obtaining significant and encouraging clinical results.

His program has been included in clinical practice as MBSR (Mindfulness Stress Reduction Program) and in US it was later expanded in different clinical contests (2).

### **The scientific research on mindfulness applications**

After the positive results obtained by the Kabat Zinn program in clinical applications, the group of R

Davidson and collaborators in Wisconsin developed research programs to evaluate the possible influence of meditation on brain function and *neuroplasticity* and this last aspect has been the topic of different approaches in the last years: research projects involving functional MRI demonstrated that the practice of meditation (mindfulness in particular) can be a powerful tool to improve the function of our mind and to influence significantly our health (7,8).

Changes in brain neuroplasticity due to regular meditation practice has been reported in several papers and although data are not still conclusive, this implication seems real (7-9).

### **The “Wandering Mind”**

In 2010 Matthew A. Killingsworth and coll. reported in the journal *SCIENCE* that a “*wandering mind is a unhappy mind*”: clinical implications of this concept have been disentangled and the conclusion of these authors was that the ability to think about what is not happening is a cognitive achievement with high emotional cost; a wandering mind is typical for human mind, but we can do efforts to educate our mind to be in the present moment, reducing mental rumination, judgment (10).

The mind, educated and trained to function in the present moment, can be precious and helpful to maintain our mental and physical health.

We have to tolerate and face difficult moments of our life using all our mind resources at the best (4,10).

Being aware and learning to manage our emotions correctly, being in the present moment, is helpful to face difficulties: to live safe and sound we need to cultivate consciousness, self-confidence and calmness of our mind.

Our work by cultivating our mind is a precious support to find good solutions in the right moment (8).

Freeing mind from conditioning, rumination and judgment is a powerful resource to find adequate solutions in some critical situations and to cultivate kindness and generosity: this is important in any dramatic phase of our life. An example was our experience with the Covid-pandemic, loosing our friends or relatives, and many social contacts. To go through a difficult moment we need to cultivate responsibility and resilience (11-13).

## When science meets mindfulness

In recent decades, public interest in mindfulness has soared. Paralleling and perhaps feeding, the growing popular acceptance has been rising scientific attention. The number of randomized trials involving mindfulness has jumped from one in the middle of nineties to 11 between 2004 and 2010 to 213 between 2013 and 2015, according to recent articles on this topic (14).

Studies have shown benefits for different clinical conditions, depression, anxiety, irritable bowel syndrome, headache.

Unfortunately, the limitation consists in the samples of subjects included in the most part of the studies and lack of control condition: these aspects make the results not conclusive. Many researchers are working on this by organizing standardized protocols that can make the results believable. The results that we will obtain from more sophisticated and standardized studies will make mindfulness an important alternative to take care of patients, improving the results from pharmacological therapies: the focus on improvement of our mental condition, by learning the “letting go” lesson, will contribute to make solid practice by the MSMT (Modern Secular Mindfulness Training) that has considered a combination between the ancient buddhism and the modern scientific evidence-based principles. On the other side, we have to be careful about the risk of decrease the value of the practice and the risk of erroneous and dangerous applications in clinical contests (15,16).

## Mindfulness and Pain: a practical issue from an ancient philosophy

The implications about the possible role of this mental education over pain and suffering are extremely important for clinicians working on pain (5,17,18)

On one side, the conception of pain has to be changed, according to a *biopsychosocial model*. Pain is not exclusively connected to a neurotransmitter decrease: different components have to be considered and consequently a different and more multifaceted approach is needed (17,19).

On the other side, if our conception on pain change, we can face it more efficiently using different approaches.

Pain is one of the most important fields where mindfulness finds applications in clinical contests

The benefit derived from meditation practice in chronic pain has been largely debated and recently demonstrated by several studies: different research protocols have been developed to teach and educate patients with pain to mindfulness practice and to find out how to live with pain, by changing habits, and “mental constructs”. Becoming more confident, and patience can modify significantly the outcome from therapies that sometimes are not effective. It is not a resolution of pain, but just a strategy to tolerate it. If we consider chronic pain condition as a very complex and multifaceted phenomenon, we can realize how inadequate could be a therapeutic approach based on pharmacological treatment only (19, 20).

## Pain and buddhist conception

Several components contribute to the pain formation: according to Buddhist conception we can consider “pain perception” and “suffering”. Buddhist tradition educates us to recognize perception of pain (the first arrow) by letting go all the suffering around the perception (the second arrow) (5).

It is very important to recognize the second arrow: it consists in the affective and emotional aspects of pain and if we recognize and become conscious about it, we can decrease the emotional component of pain and we learn to face our pain and consequently our response to medication can significantly improve (18).

Cultivating calmness and mental peace by practicing mindfulness can be helpful to better tolerate a pain condition and to help pharmacological therapies to work better by reducing all the mental rumination that enforces pain (20).

Moreover, researches have demonstrated that mindfulness can change some pain transmission brain networks as well as how different regions of the brain communicate each other; these changes can possibly be permanent if sustained by an adequate and regular practice: in particular, two regions normally functionally connected, the anterior cingulate cortex (associates with unpleasantness of pain) and parts of the prefrontal cortex appear to become “uncoupled” in meditators (9).

In this sense mindfulness meets science as initially reported by Davidson clinical experiences successively continued by his collaborators.

The benefit of living “moment by moment”, paying attention to what ‘s going on right that moment can be hard, but it is possible; to train ourselves to focus on the present moment, to observe without judgment: this is mindfulness; the benefits from this practice are relevant in terms of physical and mental health (8).

### The lesson from the COVID-19 pandemic

An extraordinary event involved all of us in last years: COVID-19 pandemic has changed a lot our habits reducing our social and work activities. As clinicians we had to modify significantly our clinical practice, reducing face-to-face examinations, enforcing telemedicine service in different fields (13).

The management of patients with pain who needed to be supported by behavioural programs changed. Different programs were developed by web, so patients could be followed regularly with sessions on line for mindfulness practice and acceptance commitment therapy sessions during the period of the lockdown (11-13).

We have learnt a lot from the dramatic experience of COVID-19 pandemic, which pushed us to find new solutions to deliver our routine clinical practice, with modalities that we would not probably have considered in the short- medium term. Policy-makers, members of interdisciplinary migraine teams, and patient advocates should learn from this lesson too and put together their expertise and their knowledge to ameliorate our system to take care of patients with different forms of pain (13).

### Conclusions

Meditation practice, mindfulness in particular, offers a unique possibility for taking care of patients with different clinical problems. We cannot ignore that in particular for patients suffering from pain, the management of pain by using personal resources is an indispensable option to improve their condition and to enhance the effectiveness of pharmacological treatments, so often not completely helpful. Moreover,

although data are preliminary, there is mounting evidence that meditation influences functional and structural changes in the brain. It is therefore important for clinicians and policy makers to consider this option in multidisciplinary setting for taking care of patients with pain and with other pathological conditions.

### References

1. Kabat-Zinn, J. An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General hospital psychiatry*, 1982; 4(1), 33-47
2. Kabat Zinn J. Full catastrophe living. Bantam Books Trade paperbacks. New York. 2003; (second edition)
3. Kabat-Zinn, J. Coming to our senses: Healing ourselves and the world through mindfulness. 2005; Hachette UK.
4. Dalai Lama, D Goleman. Destructive Emotions. 2003; By MIND and LIFE Institute. Bantam Eds
5. Bikkhu Analayo. Mindfully facing disease and death. Compassionate Advice from Early Buddhist texts. 2016; Windhorse Publications.
6. Goleman D, Davidson R. La meditazione come cura. 2017; Rizzoli.
7. Davidson, R. J. Mindfulness-based cognitive therapy and the prevention of depressive relapse: Measures, mechanisms, and mediators. *JAMA psychiatry*, 2016; 73(6), 547-548
8. Davidson R, Begley S. The emotional life of our brain. 2012; Hudson Street Pres (Penguin)
9. Zeidan F, Baumgartner, J. N., & Coghil, R. C. The neural mechanisms of mindfulness-based pain relief: a functional magnetic resonance imaging-based review and primer. *Pain reports*, 2019; 4(4)
10. Killingsworth MA, Gilbert DT. A Wandering mind is an Unhappy mind. *Science*, 2010; 330: 932-933
11. Grazzi L, Telesca A, Rizzoli P. Management of chronic migraine with medication overuse by web-based behavioral program during the COVID-19 emergency: results at 12 months. *Neurol Sci* 2022; 43:1583-1585.
12. Grazzi L, Montisano DA, Raggi A, Rizzoli P. Feasibility and effect of mindfulness approach by web for chronic migraine and high-frequency episodic migraine without aura at in adolescents during and after COVID emergency: preliminary findings. *Neurol Sci* 2022; 43:5741-5744.
13. Wilcocks A, Joy DLA, Seward J, et al. Patient experiences of remote care in a pain service during a pandemic. *British Journal of Pain*; 2022; Vol. 0(0) 1-10
14. Galante J et al. Mindfulness-based programmes for mental health promotion in adults in nonclinical settings: A systematic review and meta-analysis of randomized controlled trials. *Plos Med*; 2021; 18(1): e1003481
15. Farb N. From Retreat Center to Clinic to Boardroom? Perils and Promises of the Modern Mindfulness Movement. *Religions*; 2014; 5:1062-1086

16. Peccarisi C, Sandrini G. Neurofilosofia Meditazione tra spiritualita' e pratica clinica. *La Neurologia Italiana* 2021; 2: 36-43
17. Conrad, R., Wegener, I., Geiser, F., & Kleiman, A. Temperament, character, and personality disorders in chronic pain. *Current Pain and Headache Reports*, 2013; 17(3), 1-9
18. Ostaseski F. *The Five Invitations*. 2017; Flatiron Books. 2017
19. Cheatle, M. D. Biopsychosocial approach to assessing and managing patients with chronic pain. *Medical Clinics*, 2016; 100(1), 43-53
20. Giraldi T. *Mindfulness e psicoterapia*. Il Mulino Ed. 2020

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