

Baseball has provided me with the biofeedback, neuroplasticity and mindfulness therapy I have needed to recover from my brain injury 37 years ago. On December 31, 1976 at around 3 A.M., I ran head first into the side of Bob Brewer's, Ford Pinto while riding Pat Moore's snowmobile by Summit Lake, Oregon. My friends said I was going full speed and was catapulted from the snowmobile to the side of Bob's parked car.

On impact, I broke my left jaw below my chin and rammed my right jawbone into my ear canal, separated my skull completely (cap fracture), shattered most of my teeth and fractured a rib. In the hospital the doctors couldn't set my jaw for two days because of brain swelling.

My hospital records show that I was in a Posey Jacket and wrist restraints all the time I was in the hospital. One day when I was in the bathroom I ranked out my catheter and a few days later was sent home with my parents because I started to get loose (3 times in 6 days). On my last day in the hospital I was found urinating in a planter in the hallway.

For my safety and the liability of the hospital, I was sent home with my family who were told if they couldn't handle me to put me in a nursing home.

When I awoke at home a month after the accident I came out of darkness through a fog to about six inches from the mirror in my parent's bathroom picking the wires in my mouth that was wired shut because of my broken jaw.

I took a step back and saw I was in my bathrobe so I knew I must be at home and I knew my name was Ken and I played baseball.

I didn't know anything about home, Ken or baseball - all I knew was that my mouth was wired shut and that I wanted to find out why!

Over the years many of my memories of who I am and what I have done have come back to me.

**However, the events of that night haven't.**

**I remember Christmas Eve because I went to McCreedy Springs to lay in the hot springs and then I don't know anything until I awoke standing in front of the mirror picking the wires in my mouth.**

**I remember coming home for the holidays to regroup and figure out where I was going to play that summer in Mexico, Italy or Australia? But all of that changed after the accident that I still can't remember!**

**I respect baseball and am grateful for the lessons and rewards it has given me. These rewards aren't monetary but emotional and neurological. The memories I have from playing the game of baseball and the coaches who were my mentors taught me the skills that have gotten me through my darkest hours over the years and provided me with the courage to not give up.**

**I respect my brain injury because of the lessons I have learned to get over the obstacles (stigma and stereotype) that society has created for people with brain injuries and other disabilities.**

**Baseball has played a major role in my rehabilitation and the way to judge my recovery over the years.**

**After my brain injury I pitched on several semi-pro teams in Eugene/Springfield, Oregon, but things weren't the same. The first few years were very difficult because I didn't have the self-confidence and discipline it takes to be a good pitcher. I pitched on 4 teams in six years, played some softball from time to time but didn't have the ability to play at the level I could before my injury.**

**My self-confidence took about eight years to return and by now a Men's Senior Baseball League team - Eugene Giants - was being organized by some old semi-pro baseball teammates who wanted me to pitch on their team. I pitched and I got better. I got better and my self-esteem improved, and this gave me hope because I could see that I could do things I wasn't able to do the previous season.**

**Baseball also teaches you about poise and mindfulness.**

**Mindfulness teaches you how to stay in control of yourself and your surroundings.**

**When it's the bottom of the ninth with no outs and the bases loaded and have a one run lead - I had to throw strikes and get people out.**

**If I lost my poise it gave my opposition an advantage because they could see I was becoming rattled and unable to concentrate on what I am there to do – keep the ball down – throw strikes – get ground balls - pitch to win!**

**It took persistence and perseverance to regain my poise.**

**Baseball brought back the poise and self-determination that I have needed to continue with my recovery from the brain injury.**

**Today, brain injury professionals call this - mindfulness!**

**By pitching again from 1994 to 2000, I got my pride back and was able to accomplish what I had done before my injury. I could see that I was getting better because I could start hitting the “spots” again and this took concentration and focus.**

**Concentration and focus are critical elements in regaining old skills and learning new ones. This improved my self-confidence and self-esteem even more. I could start seeing light at the end of the tunnel and this gave me hope.**

**Hope is something that gets eaten away during the recovery process.**

**It's easy to give up hope and start blaming others when you don't see that you are getting better and the constant reminders of "how you used to be -and- who you are now" compounds our situation.**

**The loss of your old self and the isolation this causes can be overwhelming and makes it easy to give up hope and start blaming others for our problems.**

**Baseball and brain injury are a lot alike.**

**When I played "organized ball" in the minor leagues for the Milwaukee Brewers for 5 seasons (4 regular seasons & a Winter Ball Instructional League) and a season in Santiago, Dominican Republic, I always worked hard and took every advantage to learn from my managers and coaches. I took pride in the lessons I learned and the managers and coaches who taught me.**

**Today, I use those skills when I work with people with brain injuries to live independently in the community.**

**It takes discipline, self-confidence and practice to succeed!**

**Discipline, self-confidence, practice and repetition are neuroplasticity.**

**Organized baseball also taught me about learning "situations."**

**Situations are what we practiced everyday during spring training. Thinking about these situations is when you have to think ahead and make the pitches it will take to "control the situation."**

**This is also MINDFULNESS!**

**For example:**

**With a runner on first who is a threat to steal second with nobody out – and you have a left handed hitter up - you have to know what pitch to make to get a ground ball for a double play.**

**You have to make that pitch so that your infielders make a double play so that you can get two outs - instead of having two runners on base, with no one out. This can be very stressful**

**Learning situations is about knowing how to relax during these stressful times.**

**Today, this is called - Biofeedback.**

**Being able to throw over ninety miles an hour and hit the spots from sixty feet - six inches (length from front of pitchers rubber to home plate) is very difficult and staying relaxed controls stress and also**

**makes it easier to think and stay focused.**

**Mindfulness is about controlling situations, relieving stress and staying calm after a brain injury.**

**Biofeedback knows when your muscles are tight and how to relax after a brain injury.**

**Neuroplasticity is about practice and repetition so you can recover from a brain injury.**

It's easier to think and stay focused.

Mindfulness is about controlling thoughts, relieving stress and staying

calm after a brain injury.

Let's face it, when your muscles are hurt, it's all too easy to miss after

a brain injury.

Rehabilitation is about practice and repetition so you can recover from

a brain injury.

# Mindfulness-based stress reduction

From Wikipedia, the free encyclopedia

Mindfulness-based stress reduction (MBSR) is a mindfulness-based program designed initially to assist people with pain and a range of conditions and life issues that were difficult to treat in a hospital setting developed by Jon Kabat-Zinn at the University of Massachusetts Medical Center, which uses a combination of mindfulness meditation, body awareness, and yoga to help people become more mindful.<sup>[1]</sup> In recent years, meditation has been the subject of controlled clinical research.<sup>[2]</sup> This suggests it may have beneficial effects, including stress reduction, relaxation, and improvements to quality of life, but that it does not help prevent or cure disease.<sup>[3]</sup> While MBSR has its roots in spiritual teachings, the program itself is secular.<sup>[4]</sup>

## Overview

MBSR has been described as "a group program that focuses upon the progressive acquisition of mindful awareness, of mindfulness".<sup>[5]</sup> The MBSR program is an eight-week workshop taught by certified trainers that entails weekly group meetings, homework, and instruction in three formal techniques: mindfulness meditation, body scanning and simple yoga postures. Body scanning is the first prolonged formal mindfulness technique taught during the first four weeks of the workshop, and entails quietly lying on one's back and focusing one's attention on various regions of the body, starting with the toes and moving up slowly to the top of the head.<sup>[1][6]</sup>

According to Kabat-Zinn, the basis of MBSR is mindfulness, which he defined as "moment-to-moment, non-judgmental awareness.

## Extent of practice

According to a 2014 article in *Time* magazine, mindfulness meditation is becoming popular among people who would not normally consider

meditation.<sup>[11]</sup> The curriculum started by Kabat-Zinn at University of Massachusetts Medical Center has produced nearly 1,000 certified MBSR instructors who are in nearly every state in the US and more than 30 countries. Corporations such as General Mills have made it available to their employees or set aside rooms for meditation. Democratic Congressman Tim Ryan published a book in 2012 titled *A Mindful Nation* and he has helped organize regular group meditation periods on Capitol Hill.<sup>[11][8]</sup>

## Evaluation of effectiveness

Mindfulness-based approaches have been the subject of increasing research interest: 52 papers were published in 2003, rising to 477 by 2012.<sup>[11]</sup> Nearly 100 randomized controlled trials had published by early 2014.<sup>[9]</sup>

Some research has suggested that therapy incorporating mindfulness might help people with anxiety, depression, and stress; however, the poor quality of the research casts doubt on these claims.<sup>[10]</sup>

<sup>[11]</sup> According to Cancer Research UK, while some evidence has shown MBSR may help with symptom relief and improve quality of life, there is no evidence it helps prevent or cure disease.<sup>[3]</sup> A 2013 statement from the American Heart Association on alternative approaches to lowering blood pressure concluded that meditation techniques other than Transcendental Meditation, including MBSR, are not recommended in clinical practice to lower blood pressure.<sup>[12]</sup> Nevertheless, MBSR can have a small beneficial effect helping with the depression and psychological distress associated with chronic illness.<sup>[13]</sup>

Preliminary evidence suggests efficacy of mindfulness meditation in the treatment of substance use disorders, however further study is required.<sup>[14]</sup> MBSR might be beneficial for people with fibromyalgia: there is no evidence of long-term benefit but low-quality evidence of a small short-term benefit.<sup>[15]</sup>

## References

- ^ Jump up to: <sup>a</sup> <sup>b</sup> <sup>c</sup> <sup>d</sup> <sup>e</sup> Pickert K (February 2014). "The art of being mindful. Finding peace in a stressed-out, digitally dependent culture may just be a matter of thinking differently". *Time* **183** (4): 40–6. PMID 24640415.

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## What Is Neuroplasticity?

Comments [2]

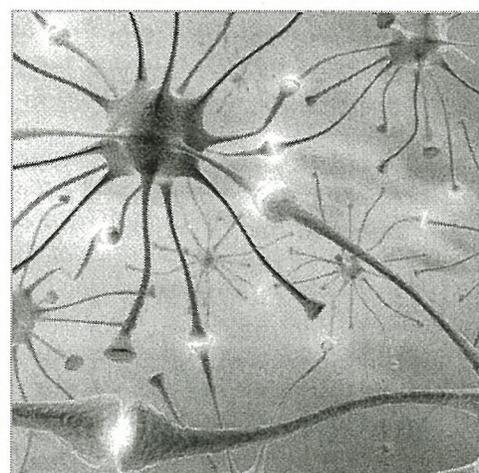
Celeste Campbell, PsyD, BrainLine

I keep reading about neuroplasticity in the news. What is it exactly, and how does it help those of us recovering from a brain injury?

Neuroplasticity is the brain's amazing capacity to change and adapt. It refers to the physiological changes in the brain that happen as the result of our interactions with our environment. From the time the brain begins to develop in utero until the day we die, the connections among the cells in our brains reorganize in response to our changing needs. This dynamic process allows us to learn from and adapt to different experiences.

Neuroplasticity is definitely a factor in recovery from brain injury. In fact, it is the basis for much of our cognitive and physical rehabilitation practices. Part of rehabilitation is aimed at trying to rebuild connections among the nerve cells — or neurons. This "re-wiring" of the brain can make it possible for a function previously managed by a damaged area to be taken over by another undamaged area. The connections among the cells are infinitely receptive to this type of change and expansion.

In addition, we are now learning more about neurogenesis — the actual generation of new brain cells. Recent research has demonstrated that neurogenesis does indeed continue into and throughout adult life, although only in specific areas of the brain. Researchers are exploring ways to identify those areas of the brain where new cells are developing, to discover how to promote or inhibit neurogenesis, and to learn how new neurons may become part of the working brain. The hope is that this information will ultimately help people better recover from brain injury.



### MORE INFORMATION

Train Your Mind, Change Your Brain: How a New Science Reveals Our Extraordinary Potential to Transform Ourselves (Ballantine Books, Sharon Begley, 2007)

Adult Neurogenesis

Click here to go to About Ask the Expert.



**Celeste Campbell, PsyD**, Dr. Celeste Campbell is a neuropsychologist in the Polytrauma Program at the Washington, DC Veterans Administration Medical Center. She has a long history of providing cognitive psychotherapy and developing residential behavioral management programs for children and adults.

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## Comments [2]

*Could you explain to me what adult neurogenesis is and the mechanism behind it . Waiting for your kind reply.*

Oct 1st, 2012 8:52am

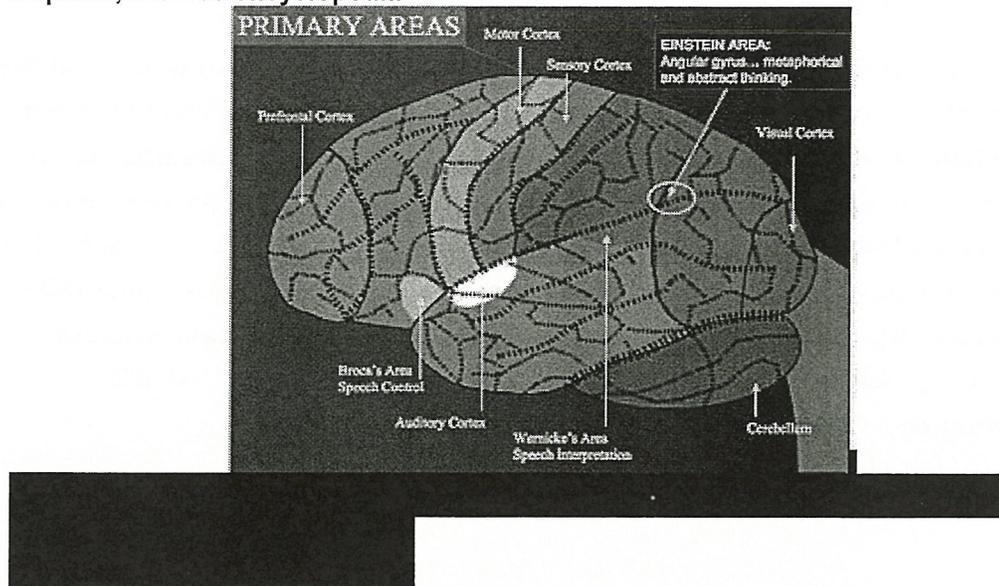
*Being a sufferer of this sort of injury from a motorcycle RTC, I can confirm that recovery is slow but progressive although my short term memory is impaired as if I was 80. Nice to think you recover but 11 years later I still have write every normal occurrence down. RSC.*

*brab05@o2.co.uk*

Sep 18th, 2011 4:37am

+ Add comment

From Wikipedia, the free encyclopedia



Neuroplasticity, also known as brain plasticity, is an umbrella term that encompasses both synaptic plasticity and non-synaptic plasticity—it refers to changes in neural pathways and synapses due to changes in behavior, environment, neural processes, thinking, emotions, as well as changes resulting from bodily injury.<sup>[1]</sup> Neuroplasticity has replaced the formerly-held position that the brain is a physiologically static organ, and explores how - and in which ways - the brain changes throughout life.<sup>[2]</sup>

Neuroplasticity occurs on a variety of levels, ranging from cellular changes due to learning, to large-scale changes involved in *cortical remapping* in response to injury. The role of neuroplasticity is widely recognized in healthy development, learning, memory, and recovery from brain damage. During most of the 20th century, the consensus among neuroscientists was that brain structure is relatively immutable after a critical period during early childhood. This belief has been challenged by findings revealing that many aspects of the brain remain plastic even into adulthood.<sup>[3]</sup>

Hubel and Wiesel had demonstrated that ocular dominance columns in the lowest neocortical visual area, V1, were largely immutable after the critical period in development.<sup>[4]</sup> Critical periods also were studied with respect to language; the resulting data suggested that sensory pathways were fixed after the critical period. However, studies determined that environmental changes could alter behavior and cognition by modifying connections between existing neurons and via neurogenesis in the hippocampus and other parts of the brain, including

the cerebellum.<sup>[6]</sup>

Decades of research<sup>[6]</sup> have now shown that substantial changes occur in the lowest neocortical processing areas, and that these changes can profoundly alter the pattern of neuronal activation in response to experience. Neuroscientific research indicates that experience can actually change both the brain's physical structure (anatomy) and functional organization (physiology). Neuroscientists are currently engaged in a reconciliation of critical period studies demonstrating the immutability of the brain after development with the more recent research showing how the brain can, and does, change in response to hitherto unsuspected stimuli.<sup>[7][8]</sup>

# Meditation for Athletic Performance

By [Dan Peterson](#)

We've looked at the importance of [Alpha EEG rhythms](#) before, and the association of higher Alpha levels and [success](#) on pressure-intensive, precise activities like free throw shooting, and putting performance in golf. Given this correlation, it seems significant to athletes that a recent study from researchers at Harvard Medical School provides evidence that mindfulness meditation may enhance our ability to control our alpha rhythm levels.

Via [Medical News Today](#):

*The study tested 12 healthy volunteers with no previous experience in meditation. Half completed the eight-week Mindfulness-Based Stress Reduction Program developed at the University of Massachusetts. The other half were asked not to engage in any type of meditation during the study period. Using magnetoencephalography (MEG), an imaging technique that detects the location of brain activity with extreme precision, the researchers measured participants' alpha rhythms before, during and after the eight-week period. Specifically, they measured alpha rhythms in the brain area that processes signals from the left hand while participants were asked to direct their attention to either their left hand or left foot. Participants' abilities to adjust the alpha rhythm in cortical cells associated with the hand, depending on where their attention was directed, were recorded during the milliseconds immediately after they received an attention cue.*

The results showed that the subjects who completed the mindfulness meditation program showed significant differences in their ability to control and modulate their alpha rhythms. As for the larger meaning behind the study:

*The study also sheds light on how meditation may affect basic brain function, explains Stephanie Jones, PhD, of the Martinos Center, co-lead author of the paper. "Given what we know about how alpha waves arise from electrical currents in sensory cortical cells, these data suggest that mindfulness meditation practitioners can use the mind to enhance regulation of currents in targeted cortical cells. The implications extend far beyond meditation and give us clues about possible ways to help people better regulate a brain rhythm that is dysregulated in attention-deficit hyperactivity disorder and other conditions."*

It is yet another piece of the growing body of evidence for the case that mindfulness meditation is a potent tool for changing the way the brain functions, and even the structure of the brain. A [study](#) last year conducted by researchers at the University of Oregon demonstrated that mindfulness meditation training can very rapidly lead to white matter growth in the brain. A [literature review](#) around mindfulness meditation shows that it can significantly improve behavioral and biological markers as diverse as mood control, immune function, and stress hormone levels.

These studies prompt obvious questions about whether athletes ought to be practicing mindfulness meditation to enhance their performance, especially with respect to the clutch situations where performance has already been tied to alpha rhythm levels and a quiet brain. The question of whether mindfulness meditation training has any effect on sports performance has not been extensively studied, although [this 1996 study](#) demonstrated a significant improvement in shooting performance among marksmen after meditation training. It is a research area that seems overdue for exploration.

For more on how meditation changes the brain, see [this excellent interview](#) with Michael Posner of the University of Oregon on NPR's Science Friday.



# What is biofeedback?

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The American Psychological Association has named biofeedback as a clinical proficiency.<sup>[2]</sup>

The Association for Applied Psychophysiology and Biofeedback (AAPB), the Biofeedback Certification Institution of America (BCIA), and the International Society for Neurofeedback and Research (ISNR) approved the following definition of biofeedback on May 18, 2008:

“ Biofeedback is a process that enables an individual to learn how to change physiological activity for the purposes of improving health and performance. Precise instruments measure physiological activity such as brainwaves, heart function, breathing, muscle activity, and skin temperature. These instruments rapidly and accurately "feed back" information to the user. The presentation of this information — often in conjunction with changes in thinking, emotions, and behavior — supports desired physiological changes. Over time, these changes can endure without continued use of an instrument”

## What is biofeedback?

The American Psychological Association has defined biofeedback as a clinical procedure in which the individual is made aware of physiological processes.

The Association for Applied Psychophysiology and Biofeedback (AAPB), the Biofeedback Certification Institute of America (BCIA), and the International Society for Neurofeedback and Research (ISNR) approved the following definition of biofeedback on May 18, 2004:

Biofeedback is a process that enables an individual to learn how to change physiological activity for the purpose of improving health and performance. Practice instruments measure physiological activity such as heart rate, brain function, breathing, muscle activity, and skin temperature. These instruments rapidly and accurately "feed back" information to the user. The presentation of this information – often in conjunction with changes in thinking, emotions, and behavior – supports desired physiological changes. Over time these changes can endure without continued use of an instrument.<sup>15</sup>