MINDFULNESS - THE CLINICAL RELEVANCE OF HUMAN NEUROPLASTICITY

Jeffrey M. Schwartz
UCLA Department of Psychiatry, Los Angeles, CA USA

Neurobiological research in our era has generally assumed that brain mechanisms alone will ultimately suffice to explain all psychologically described phenomena. This assumption stems from the idea that all causal mechanisms relevant to neuroscience can be formulated solely in terms of the principles of classic Newtonian physics. Thus, terms having intrinsic experiential content (e.g. feeling, observing and effort) are not included as primary causal factors. This theoretical perspective is dictated by ideas about the natural world that have been known to be fundamentally incorrect for more than three-quarters of a century. Contemporary physical theory differs profoundly from classic Newtonian physics on the important matter of how the consciousness of human agents enters into the causal dynamics of empirical phenomena. The new quantum principles contradict the older idea that mechanical processes alone can account for all observed empirical data. Contemporary quantum physical theory brings directly and irreducibly into the overall causal structure certain psychologically described choices made by human agents about how they will act. This key development is applicable to neuroscience, and it provides neuroscientists and neurologists with an alternative conceptual framework for describing neural processes. The new framework, and specifically the well described physical principle known as quantum Zeno effect, enables scientists and clinicians to better understand the neuroplastic mechanisms relevant to the growing number of studies demonstrating the capacity of directed attention and mental effort to systematically alter brain function. Clinical neurophysiological and neuropsychological findings from research on depression, attentional deficits, placebo effect, stroke, and normal human psychology will be discussed and elucidated in light of this theoretical paradigm shift.