The Science and Practice of the Healing Power of Humor, Laughter, and Play

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Beat the Odds®
High Impact Therapy

• What helps us to reduce stress, helps also to prevent or reduce the risk of (or survive from):
  • heart disease
  • stroke
  • cancer
  • dementia
  • diabetes
  • obesity
  • etc.

An Old Joke

Pharaohs laughed too

• Carol Andrews, British investigator of humor, states that ancient Egyptian humor was not unlike the contemporary. Like us, the ancient Egyptians liked obscene jokes; they had political satire, parodies, something akin to animated cartoons, and even black humor.
Humor, as an adjunct therapy in cardiac rehabilitation, attenuates catecholamines and myocardial infarction recurrence.


Lee S. Berk

William F. Fry
Laughter as an evidenced-based psychiatric treatment

EVIDENCE-BASED REVIEWS

No laughing matter: Laughter is good psychiatric medicine

Laughter can be helpful for treating mood disorders and other conditions.


Laughter as an evidenced-based psychiatric treatment

EVIDENCE-BASED REVIEWS

• Humans begin to laugh at approximately 4 months of age. Children laugh, on average, 400 times a day; adults do so an average of only 5 times a day. In addition:
  • Tickling a baby induces her (him) to laugh, which, in turn, makes the parent laugh; a social bond develops during this playful exercise. This response is probably mediated by 5-HT1A receptors, which, when stimulated, induces the release of oxytocin, which facilitates social bonding.
  • Lower species are also known to enjoy laughter. Mice emit a chirping sound when tickled, and laughter is contagious among monkeys.
  • Berk et al reported that, when 52 healthy men watched a funny video for 30 minutes, they had significantly higher activity of natural killer (NK) cells and higher levels of IgG, IgA, and IgM compared with men who watched an emotionally neutral documentary.

Current Psychiatry

• Bennett et al showed that, in 33 healthy women, the harder the laughter, the higher the NK activity.
• Sugawara et al showed improved cardiovascular function in 17 healthy persons (age 23 to 42) who watched a 30-minute comedy video, compared with their cardiovascular function when they watched a documentary video of equal length.
• Svebak et al examined the effect of humor as measured by the Sense of Humor Survey on the survival rate of more than 53,000 adults in one county in Norway. They concluded that the higher the sense of humor score, the higher the odds ratio of surviving 7 years, compared with subjects who had a lower sense of humor.
• Fonzi et al summarised data on the neurophysiology of laughter and the effect of laughter on the hypothalamus-pituitary-adrenal axis. They noted that depression reduces the frequency of laughter and, inversely, laughter reduces the severity of depression. Laughter, they reported, also increases the connectivity of patients with people in their life, which further alleviates symptoms of depression.
Humor and laughter are underutilized and underreported in therapy, in part because it is a nascent field of research. Laughter has social and physiologic benefits that can be used in the context of a therapeutic relationship to help patients with a variety of ailments, including depression, anxiety, and pain.

"Studying humor is like dissecting a frog—you may know a lot but you end up with a dead frog."
Mark Twain

Unconditioned Laughter is going to revive the subject.
He firmly believes laughter is the best medicine.

But I can’t tickle myself 😐

Central cancellation of self-produced tickle sensation.
Blakemore SJ, Wolpert DM, Frith CD.

Why can’t you tickle yourself?
Blakemore SJ, Wolpert D, Frith C.

Attenuation of somatosensory responses to self-produced tactile stimulation.
Hesse MD, Nishitani N, Fink GR, Joumblat V, Hert R.

Many Theories and Definitions

Empirical studies on humor and laughter demonstrate that physiological benefits occur regardless of the theory or definition that is used to explain their function.

Humor theories and the physiological benefits of laughter.
Wilkins J, Eisenbraun AJ.
Definitions – Laughter
Merriam-Webster

• Laughter: a sound of or as if of laughing

• Laugh:
  a: to show emotion (as mirth, or joy) with a chuckle or explosive vocal sound
  b: to find amusement or pleasure in something

Definitions – Play
O. Carl Simonton, M.D.

Play: an experience of having fun

Let’s laugh and play together

Laughter: a sound of or as if of laughing

Play: an experience of having fun

So we ask you to:
play along with making laughing sounds and having fun with it
Laughter Yoga

- Laughter Yoga combines Unconditioned Laughter with Yogic Breathing (Pranayama). Anyone can Laugh for No Reason. The concept of Laughter Yoga is based on a scientific fact that the body cannot differentiate between fake and real laughter. One gets the same physiological and psychological benefits.

Dr. Madan Kataria with wife Madhuri
co-founders of the Laughter Yoga Clubs movement

"Laughter yoga is a concept where anybody can laugh for no reason at all. You don't need any jokes, any humor, or any comedy. You don't even need to be happy. What we do is laugh in a group and initiate laughter as a form of bodily exercise, but when we have eye contact with others, this laughter becomes real and contagious."

"To bring about physiological and biochemical changes, laughter has to be hearty, from the belly. Second, laughter must be extended. Laughter in real life lasts for a couple of seconds and then is done, but this isn't enough. That's why laughter in laughter yoga is hearty laughter extended for a period of time until our physiology changes. Also, it is unconditional. You're not dependent upon any conditions except the ones that we create."

Functional imaging agrees with clinical evidence that the neuroanatomical networks supporting voluntary and humor-evoked smiling are different. Motor-related areas (e.g. primary motor cortex, premotor cortex, operculum) are consistently activated during voluntary facial movement (left), but not during humor-evoked smiling (right). Differences in the areas activated probably relate to the different contrasts utilized in these three studies.

© 2007 American Neuropsychiatric Association
Regions involved in the generation of normal and pathological laughter. Note that in the mesencephalic and pontine regions, the fibers from the PAG, which probably transmit the signal to laugh, are located dorsally/tegmentally, whereas the fibers from the frontal motor areas run ventrally, probably inhibiting facial emotional expressions.

BASAL TEMP = basal temporal lobe including amygdala; CB = cerebellum; CMN = cervical motor neurons; BG = basal ganglia; HYPOTHAL = hypothalamus; MOTOR = motor area; N.X = vagal nerve nucleus; PAG = periaqueductal grey; PREFRONTAL = medial and dorsolateral prefrontal cortex; PREMOTOR = premotor area; SMA = supplementary motor area; THAL = thalamus.

Effects of Mirthful Laughter on the Vascular Endothelium


The effect of mirthful laughter on the human cardiovascular system.

Miller M, Fry WF.

Plots of levels of inflammatory markers


Laughter up-regulates the genes related to NK cell activity in diabetes.

Genes showing continuous increase in expression 1.5 and 4 hours after watching a comic video

Laughter is associated with reduced cardiovascular risk factors.
Laughter

- Decreases anxiety and improves mood
- Hope – “If we can laugh, it is not all so bad.”
- Engaged and alive
- Healthy distance to ourselves and to the situation we are in
- Engaged but with non-attachment
- Sense of connection to those who are laughing with us
- Transcendence

Universal Medicine

“Laughter is the most inexpensive and most effective wonder drug. Laughter is a universal medicine.”

Bertrand Russell
Universal Medicine

- Unconditioned laughter, without humor or jokes, is the universal medicine.
- Humor depends on our tastes and timing and sometimes may be inappropriate.
- Unconditioned laughter doesn't have limitations of humor and can be applied for anything anytime (e.g., in grieving).
- Laughter is universal and free of any language barriers.

Spirituality

- Laughter is a deeply spiritual emotion. Maybe that's why the list of Jewish comedians is so long! Understand the dynamics of laughter and use it wisely.
  - Rabbi Noah Weinberg

Spirituality

- Laughter and play touch the deepest parts of our soul—where we are still innocent and are not afraid to express our true nature. Like children who express it effortlessly.
Spirituality

- Laughter brings us back in touch with our bodies and to the present moment. When playing with full abandon, all our problems effortlessly melt away like snowflakes falling in warm water. Laughter arises and brings us back to the essence of our existence and the timeless present.

- “What is this precious love and laughter budding in our hearts? It is the glorious sound of a soul waking up!” — Hafiz

- “When you laugh, aside from the endorphin rush, there’s also a spiritual opening. You’re not so tight inside yourself. That opening I’ve found to be a real gift, in people being able to absorb spirituality.” — Rabbi Sydney Mintz

- “It’s one thing to say, ‘I don’t fear death’, but to laugh out loud somehow drives the idea home. It embodies our theology.” — Rev. Laura Gentry

Relationships

- “Laughter is the shortest distance between two people.” — Victor Borge

- “When we laugh together, there is instantaneous recognition of ‘sameness’ even in the midst of vast differences.” — Rebecca Foster

- “Laughter as a primal behavioral tool used by individuals - be they human or ape - to prompt other individuals of a peer group and to create a mirthful context for social interaction and communication.”

Aerobic Exercise

• Genuine voiced laughter causes a 10-20% increase in EE and HR above resting values, which means that 10-15 min of laughter per day could increase total EE by 40-170 kJ (10-40 kcal).

Energy expenditure of genuine laughter.
Buchowski MS; Majchrzak KM; Blomquist K; Chen KY; Byrne DW; Bachorowski
JA Int J Obes (Lond). 2007; 31(1):131-7 (ISSN: 0307-0565)

Normalizes Blood Pressure
Reduces stress

• The effects of hearty extended unconditional (HEU) laughter using laughter yoga techniques on physiologival, psychological, and immunological parameters in the workplace: a randomized control trial.

• Humor: an antidote for stress.
Woolen P.

Reduces Pain

• "I made the joyous discovery that ten minutes of genuine belly laughter had an anesthetic effect and would give me at least two hours of pain-free sleep." "When the pain-killing effect of the laughter wore off, we would switch on the motion picture projector again and not infrequently, it would lead to another pain-free interval." Norma Cousins (long-term survivor of heart disease and connective tissue disease)

• Laughter, humor and pain perception in children: a pilot study.
Stuber M, Hilker S, Antin LE, Costantini M, Glover D, Jaffe L.

• Humor as a cognitive technique for increasing pain tolerance.
Weisenberg M, Tepfer I, Schweitzer J.
Pain. 1993 Nov;53(3):207-12
Helps in Dementia

- Laughter is a compensatory behavior utilized to overcome communication barriers
  Laughter and humor as complementary and alternative medicines for dementia patients.

- Laughter, communication problems and dementia.
  Lindholm C.

- The use of conversational laughter by an individual with dementia.
  Wilson BT, Azaror N, Damico JS
  Clin Linguist Phon. 2007; 21(11-12):1001-6 (ISSN: 0269-9206)

Type 2 Diabetes

- laughter suppressed 2-h postprandial blood glucose level increase in patients with type 2 diabetes
- laughter decreased the levels of prorenin in blood; prorenin is involved in the onset of diabetic complications
- laughter delays onset of diabetic peripheral neuropathy
- laughter inhibits the onset/deterioration of diabetic complications at the gene-expression level
- increased Natural Killer cell activity and improved glucose tolerance

The effects of laughter on post-prandial glucose levels and gene expression in type 2 diabetic patients. Hayashi T; Murakami K.
Life Sci. 2009; 85(5-6):185-7 (ISSN: 1879-0631)

Immunity

Watching a funny video is not enough. Laughing at it improves immunity.

- The effect of mirthful laughter on stress and natural killer cell activity.
  Bennett MP, Zeller JM, Rosenberg L, McCann J.

- Modulation of neuroimmune parameters during the eustress of humor-associated mirthful laughter.
  Berk LS, Feltman DL, Tan SA, Bitman BB, Westengard J.
Cancer

- Positive correlation between humor and comfort levels in patients with cancer
- Humor frequently was used for relaxation and as a coping mechanism that aided in
- Promoting general wellness.
- Humorous material lessened anxiety and discomfort, which allowed for patients’ concerns and fears to be discussed openly.
- Positive effect on the immune system. Improvements in pain thresholds and elevations in natural killer cell activity consistently appeared in quantitative experimental studies.
- In addition, measurements of specific neuroendocrine and stress hormone levels revealed biochemical changes that suggested improved physical stress responses and increased feelings of well-being after humorous interventions.
- Humor can be an effective intervention that impacts the health and well-being of patients with cancer.

Aging and Longevity

- The role of psychotherapy and humor for death anxiety, death wishes, and aging.
- Laughing as we go. Humor and aging.
- Laugh it off. The effect of humor on the well-being of the older adult.
- Smile Intensity in Photographs Predicts Longevity
  Ernest L. Abel and Michael L. Kruger. Psychological Science February 2010

Smile Intensity in Photographs Predicts Longevity

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Unconditional laughter

Play with making laughing sounds and have fun with it!

- Listen to your body – no new pain or symptoms
- Make and maintain eye contact
- No talking
- Remember: pretending is OK – just use your imagery
- Participate without inhibitions or judgments

Laughter - Resources

LaughYourCancerOff.com