

Scientific Research On Laughter And Humor

This paper describes the medical benefits of laughter and humor based on the research work done by scientists all over the world during the last 50 years.

Prior to the introduction of Laughter Yoga in 1995, most of the scientific research on the benefits of laughter was based on humor. Researchers induced laughter by using humorous interventions such as comedy movies and joke telling. This required cognitive ability to produce laughter that would eventually create positive physiological and psychological changes to the body.

Since Laughter Yoga is not humor based, it by-passes the brains understanding of jokes and humor. There are no language barriers. It needs no special conditions to work. It is practiced anytime in all circumstances.

In 22 years Laughter Yoga has spread around the world. There are Laughter Clubs in hundreds of countries on six continents, joining people of different cultures, religions, and ethnic backgrounds. It is a grass-roots movement grown out of the positive health benefits it produces and the friendship and understanding gained. Laughter is contagious and practitioners of Laughter Yoga spread it to others.

The science shows that it doesn't matter if laughter is self-induced or spontaneous. The physiological and psychological benefits are the same. In Laughter Yoga Clubs, laughter is induced to begin with. As we laugh together, the laughter quickly becomes real and spontaneous.

HOW LAUGHTER AFFECTS YOUR BODY

Here's what happens to your body when you burst out laughing:

Your Head
Reduces the effects of stress hormones, lowering your stress and anxiety levels
Elevates your mood

Your Appetite
10-15 minutes of genuine laughter can burn 10-40 calories per day
Modulates and optimizes appetite hormones (leptin and ghrelin) to increase your appetite, similar to exercise

Your Immune System
Increases production of antibodies
Activates protective cells, including T cells and cells that kill tumor cell activity

Your Heart
Reduces inflammation
Protects against cardiovascular disease, including arrhythmias, hypertension and recurrence of heart attacks
Lowers bad cholesterol and raises good cholesterol
Lowers systolic blood pressure

Your Muscles
Relaxes your muscles

Your Bladder
Places pressure on your bladder. For those with stress incontinence (sensitive bladders), laughing can cause bladder leaks

Your Pain Tolerance
Increases your pain tolerance by releasing endorphins

always
sensitive bladder protection discreet

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Laughter As A Stress Buster

According to Hans Selye, a pioneering Austrian-Canadian endocrinologist, laughter has a built-in balancing mechanism that encourages the two-step action of stimulation and relaxation, due to the release of the chemicals adrenaline and noradrenaline. This produces a feeling of well-being by relieving the minor stresses and strains of daily life. Laughter also reduces anxiety, tension, and depression, thereby, mitigating several serious diseases such as hypertension, heart disease, diabetes, where anxiety and tension are predisposing factors. Kay Herth (American Journal of Nursing 1984) has documented the reduction of hypertension after laughter.

Laughter As An Analgesic For Pain Relief

Laughter releases neuropeptides like Endorphins and Enkephalins which are natural opiates and pain suppressing agents. The ability of laughter to release muscle tension and soothe the sympathetic nervous system also helps to control pain, as does increased circulation. Thus, laughter has a multi-pronged approach for the relief of pain in conditions such as arthritis, spondylitis, etc.

This is demonstrated by Norman Cousins in his article (New England Journal of Medicine, Dec. 1976), where he documents that 10 minutes of laughter had an analgesic effect for 2 hours, in his personal problem of severe ankylosing spondylitis. Cousins (Prevention, March 1988) also states that laughter serves as a blocking agent against disease. Thus, laughter, by improving body immunity, can mitigate a host of chronic diseases such as bronchitis, common cold, rheumatoid arthritis, allergies, etc.

Cogan (Journal of Behavioral Medicine, 1987) demonstrated by clinical experiments that discomfort thresholds were higher in subjects after bouts of laughter.

Laughter And Immunity

Lee S. Berk, DrPH, MPH, a preventive care specialist and psychoneuroimmunologist, at Loma Linda University, CA, (Clinical Research 1989) found that laughter may attenuate some stress-related hormones and modify Natural Killer Cell activity, resulting in immunomodulation.

Journal of Behavioral Medicine, 1990, supports Berk's findings and concludes laughter results in improved immunity. In a study at Canada's University of Waterloo (Well Being Journal), it was documented that laughter increases the levels of immunoglobulin IgA and IgG.

Effect Of Laughter On Diabetes And Cholesterol

Lee Berk, has paired with Stanley Tan, MD, Ph.D. an endocrinologist and diabetes specialist at Oak Crest Health Research Institute, Loma Linda, CA, to examine the effect of "mirthful laughter" on people with diabetes. They found laughter, as a preventive adjunct therapy in diabetes care, raised good cholesterol and lowered inflammation. A group of 20 high-risk diabetic patients with hypertension and hyperlipidemia was divided into two groups:

Group C (control) and Group L (laughter). Both groups were started on standard medications for diabetes, hypertension (ACE inhibitor or ARB) and hyperlipidemia (statins). The researchers followed both groups for 12 months, testing their blood for the stress hormones epinephrine and norepinephrine; HDL cholesterol; inflammatory cytokines TNF, IFN, and IL-6, which contribute to the acceleration of atherosclerosis and C-reactive proteins (hs-CRP), a marker of inflammation and cardiovascular disease. Group L viewed self-selected humor for 30 minutes in addition to the standard therapies described above.

The patients in the laughter group (Group L) had lower epinephrine and norepinephrine levels by the second month, suggesting lower stress levels. They had increased HDL (good) cholesterol. The laughter group also had lower levels of TNF, IFN, IL-6 and hs-CRP levels, indicating lower levels of inflammation.

At the end of one year, the research team saw significant improvement in Group L: HDL cholesterol had risen by 26 percent in Group L (laughter), and only 3 percent in the Group C (control). Harmful C-reactive proteins decreased 66 % in the laughter group vs. 26 percent for the control group.

The authors conclude that mirthful laughter appears to lower the risk of cardiovascular disease associated with diabetes mellitus and metabolic syndrome. Further studies need to be done to expand and explain these findings.

Cancer And Laughter

Berk and Tan's (1996) experiment concerning the laughter-immunity connection used a few healthy males who volunteered for the experiment and had them view a funny video film for an hour. They took blood samples of their interferon-gamma (IFN) before, during and after watching the film. They obtained significant results that showed increased activity in IFN, after watching the funny video, which lasted till the following day. IFN activates the CT-Cells, B-Cells immunoglobulins and Natural Killer (NK) Cells.

Laughter As An Aerobic Exercise

Dr. W. Fry states that laughter is good aerobic exercise. He says 100 laughs a day are equal to 10 minutes of rowing or jogging. Lloyd (Journal of General Psychology, 1938) showed that laughter is a combination of deep inhalation and full exhalation, inspiring excellent ventilation, wonderful rest and profound release. Thus, laughter increases the lungs' vital capacity and oxygenation. We measured the lung's vital capacity (peak flow rate) of our members, using a Spirometer. The peak flow rate was lower than normal in 13%, (<300l/m.), it was normal in 67% (300-500 l/m.) and high in 20% (>500l/m.). This would benefit patients with pulmonary diseases such as bronchitis, bronchial asthma, bronchiectasis.

Effect Of Laughter On Cardiovascular System

Dr. Michael Miller from University Of Maryland School Of Medicine in Baltimore found that

laughter appears to cause the tissue that forms the inner lining of blood vessels, the endothelium, to dilate or expand, in order to increase blood flow. Emotionally wrenching movies that produced mental stress, on the other hand, caused vasoconstriction – tightening of the blood vessels, which reduces blood flow.

The study looked at 20 volunteers who had normal blood pressure, cholesterol and blood glucose levels. Each volunteer saw a 15-minute segment of a movie, either comedy or drama. The drama was the opening scene of “Saving Private Ryan”, the comedy was “King Pin.”

Brachial artery flow was reduced in 14 of the 20 volunteers following the movie clip that caused mental stress. In contrast, beneficial blood vessel relaxation, or vasodilation, was increased in 19 of the 20 volunteers after they watched the comedy. Overall, average blood flow increased 22% during laughter and decreased 35% during mental stress. The blood vessel changes lasted for at least 30 to 45 minutes after the volunteers watched a movie.

The researchers say the findings suggest that laughter may do the cardiovascular system good while mental stress will slow down blood flow. “Given the results of our study, it is conceivable that laughing may be important to maintain a healthy endothelium, and reduce the risk of cardiovascular disease,” says Dr. Miller, Director of Preventive Cardiology. “At the very least, laughter offsets the impact of mental stress, which is harmful to the endothelium,” he says. The beneficial changes that laughter brought were similar to the benefit seen with aerobic activity, says Dr. Miller. “We don’t recommend you laugh and not exercise, but we do recommend that you laugh on a regular basis. “Thirty minutes of exercise three times a week, and 15 minutes of laughter on a daily basis is good for the vascular system.”

Laughter Regulates Genes

Laughter as an intervention or a stimulus has the ability to regulate genes and arouse latent genetic expression. Experiments conducted on T2D (Type 2 Diabetes in Japan at the Foundation for Advancement of International Science, Bio-Laboratory; found that laughter helps regulate gene expression to control the progression of type 2 diabetes. It has a tremendous effect on gene expression in the DNA formation. It has the ability to curtail the expression of the gene that can cause type 2 diabetes. This may not be a cure, but certainly a preventive.

Japanese scientist geneticist, Kazuo Murakami used laughter to trigger energy inside a person’s DNA, potentially helping to cure a disease. Murakami had diabetics laugh at a comedy show performed by top stand-up comedians after listening to a monotonous college lecture. The two-day experiment showed that the diabetics’ blood glucose levels dropped remarkably after they laughed as compared with their levels listening to the boring lecture.

He identified 23 genes that are activated with laughter. Eighteen of these genes control the immune response and cell signal transmission. “A laughing therapy has no side-effects, meaning it’s an epoch-making treatment for clinical medicine,” Murakami said. “One day it won’t be a joke to see patients receive a prescription for a comedy video at a pharmacy for medical treatment,” he added.

Even Fake Laughter Is Good Medicine (Fairleigh Dickinson University)

Psychologists say a minute of forced laughter can help the blues. “Forced laughter is a powerful, readily available and cost-free way for many adults to regularly boost their mood and psychological wellbeing,” said Charles Schaefer, a psychology professor at Fairleigh Dickinson University in Teaneck, New Jersey. He also found that self-imposed smiling is a mood enhancer. But howling like a wolf for a minute didn’t do anything - except make a racket. His findings come from two experiments he conducted on 39 college students and Teaneck residents. While additional studies with larger samples are needed to bolster his conclusions, Professor Schaefer said, these initial results are important enough to warrant attention.

He also uncovered the salubrious effect of artificial laughter in a study of 17 Fairleigh Dickinson students. He first asked them questions that measured their mood. Then he directed them to laugh heartily for a minute and tested them again. On average, test subjects reported feeling significantly better after 60 seconds of fake merriment.

Why would phony laughter work? Because your body doesn’t know its fake, even though your brain might, Professor Schaefer said. “Once the brain signals the body to laugh, the body doesn’t care why. It’s going to release endorphins; it’s going to relieve stress as a natural physiological response to the physical act of laughing.”

Intrigued, Professor Schaefer designed a second study to compare the effects of forced laughter with continuous smiling or howling. He directed 22 study participants to smile broadly for 60 seconds, laugh heartily for 60 seconds and howl for 60 seconds. Laughing and smiling both helped boost their spirits, but howling didn’t, he found. Forced laughter was the best medicine. “One minute of forced laughing showed a significantly greater improvement than one minute of smiling,” he said.

How did test subjects know exactly what to do? “My research assistant and I would demonstrate,” he said. “We stood before them and laughed hysterically and then howled. I instructed them to imagine a wolf howling at the moon,” he said. When the subjects saw a senior professor howling; it took away some of their natural self-consciousness.

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