THE SCIENCE OF MEDITATION

Scientific Research on the effect of Transcendental Meditation on Educational Outcomes
WHAT IS MEDITATION?

“In the traditional context, meditation refers to a family of mental practices that are designed to improve concentration, increase awareness of the present moment, and familiarize a person with the nature of their own mind.

In a more general and contemporary context, meditation can be categorized as primarily focused attention, mindfulness, loving kindness and compassion, or mantra repetition, although there is usually overlap between the focuses. With focused attention, the practitioner may focus on the breath or on an object, sound, sensation, visualization, thought, or repeated word or phrase (“mantra”). When the mind wanders, the meditator notices the mind wandering and learns to bring the mind back to the present moment or the object of meditation.”
WHAT IS TRANSCENDENTAL MEDITATION? (TM)

Transcendental Meditation is a simple, natural, effortless technique, that allows the active mind to settle down and experience a deep state of rest.

The Progression of the Mind During Transcendental Meditation

AS THE MIND SETTLES DOWN
GETTING DEEP REST
– IT EXPERIENCES
‘RESTFUL ALERTNESS’
OR ‘TRANSCENDENCE’
HOW IS TRANSCENDENTAL MEDITATION PRACTISED

TM IS PRACTISED AS FOLLOWS:

• With the **eyes closed**

• Sitting **comfortably**

• **Anywhere** – at home, in the office, on a bus or train etc.

• For **15-20 minutes** in the morning and evening

• TM works for **everybody**, Anyone who can think, can meditate

• Anyone can learn: its easy to learn, **effortless and enjoyable** to practise

• TM requires **no changes in belief or lifestyle**.

• It is **not even necessary to believe** TM will work while practising the technique
EMPIRICAL EVIDENCE FOR
THE EFFICACY OF TM

Over 600 scientific studies have been conducted on the TM technique. TM is
the most extensively researched self-development programme in the world.

In over 30 countries

United States
United Kingdom
Germany
Holland
U.S.S.R.
Switzerland
South Africa
Japan
India
Canada
France
Sweden
Denmark
Norway
Australia
RESEARCH CONDUCTED BY OVER 200 LEADING ACADEMIC INSTITUTIONS INCLUDING:

- University of Cape Town (U.C.T.)
- Harvard Medical School, U.S.A.
- Harvard University
- Princeton University, U.S.A.
- Stanford Medical School, U.S.A.
- Yale Medical School, U.S.A.
- University of Chicago, U.S.A.
- University of Michigan Medical School, U.S.A.
- University of Michigan
- University of California (at Berkeley, Irvine, Los Angeles, San Diego and Santa Cruz), U.S.A.
- The University of California at Los Angeles Medical School, U.S.A.
- University of Edinburgh, Scotland
- University of Lund, Sweden
- University of New South Wales, Australia
- The Institute La Rocheftoucauld, France
- York University, Canada
- University of Groningen, The Netherlands
- University of Berlin, Germany
- The Swedish National Health Board
- The Japanese Ministry of Labour

Other Major Universities in The USA Include

- Boston University
- Cornell University
- George Washington University
- Indiana University
- Lawrence Livermore National University
- Maharishi University of Management
- Massachusetts Institute of Technology
- Ohio State University
- Pennsylvania State University
- Perdue University
- State University College of New York (at Brockport, Buffalo and New Paltz)
- University of Arkansas
- University of Colorado Medical Center
- University of Florida
- University of Georgia
- University of Kansas
- University of Maryland
- University of Massachusetts
- University of Minnesota
- University of Oklahoma
- University of Pittsburgh
- University of Southern California
- University of Tennessee
- University of Texas (at Austin and El Paso)
- University of Virginia Medical Center
- University of Washington
- West Virginia University
- Western Kentucky University
- Western Washington State College
- Xavier University
PUBLISHED IN OVER 100 MAJOR JOURNALS

- Academy of Management Journal
- Addictive Behaviors
- AGE
- Alcoholism Treatment Quarterly
- American Journal of Physiology
- American Journal of Psychiatry
- American Psychologist
- British Journal of Educational Psychology
- British Journal of Psychology
- British Medical Journal
- Bulletin of the Society of Psychologists in Addictive Behaviors
- Bulletin on Narcotics
- Business and Health
- Circulation
- Clinical and Experimental Pharmacology and Physiology
- Clinical Research
- College Student Journal
- Criminal Justice and Behavior
- Drug Forum
- Education
- Electro-encephalography and Clinical Neurophysiology
- Experimental Neurology
- Hormones and Behavior
- Hospital and Community Psychiatry
- International Journal of the Addictions
- International Journal of Comparative and Applied Criminal Justice
- International Journal of Neuroscience
- Journal of Applied Physiology: Respiratory, Environmental and Exercise
- Journal of Biomedicine
- Journal of Chronic Disease and Therapeutic Research
- Journal of Clinical Psychiatry
- Journal of Clinical Psychology
- Journal of Conflict Resolution
- Journal of Counseling and Development
- Journal of Counseling Psychology
- Journal of Creative Behavior
- Journal of Crime and Justice
- Journal of Criminal Justice
- Journal of Human Stress
- Journal of Humanistic Psychology
- Journal of Inhalation Technology
- Journal of Mind and Behavior
- Journal of Moral Education
- Journal of Neural Transmission
- Journal of Personality and Individual Differences
- Journal of Personality and Social Psychology
- Journal of Personality Assessment
- Journal of Psychology
- Journal of Psychosomatic Research
- Journal of Social Behavior and Personality
- Journal of the American Association of Nephrology Nurses and Technicians
- Journal of the American Society of Psychosomatic Dentistry and Medicine
- Journal of the Canadian Medical Association
- Journal of the Israel Medical Association (Harefuah)
- L’Encephale
- Lancet
- Medizinische Klinik
- Memory and Cognition
- Motivation
- Motor and Sensory Processes of the Brain
- Neuroendocrinology Letters
- Perceptual and Motor Skills
Rigorous protocols utilized include: ‘Randomized Control Trials’, ‘Longitudinal Analyses Over Time’ to examine long-term effects, ‘Meta-Analyses’ a statistical analysis that combines the results of multiple scientific studies, and ‘Multivariate Analyses’ to separate out other possible causal factors. All studies published are peer-reviewed.
SCIENTIFIC EVIDENCE OF TRANSCENDENTAL MEDITATION IMPROVING LEARNING OUTCOMES
## If there was a way to switch from:

### Underlying Factors Affecting Education Outcomes

<table>
<thead>
<tr>
<th>Cognitive Development Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Factors</td>
</tr>
<tr>
<td>Physiological/Health Factors</td>
</tr>
<tr>
<td>Social and Family Factors:</td>
</tr>
<tr>
<td>Financial/ Economic Factors</td>
</tr>
<tr>
<td>Societal Factors</td>
</tr>
</tbody>
</table>

### A New Way of Functioning for Learners and Teachers

- Enhanced Cognitive Functioning and Cognitive Efficiency
- Psychological Health & Wellbeing
- Physiological Health & Wellbeing, along with Longevity
- Social and Family Health and Wellbeing, Improved Relationships, Harmony
- Financial/ Economic Health, greater Self Sufficiency, Employment Prospects, Enhanced Entrepreneurship Ability, Job Satisfaction, Increased Prosperity
- Societal Health and Wellbeing, Social Cohesion and Peace

## Academic outcomes will spontaneously improve

Academic outcomes spontaneously improve as the above ‘binding constraints’ on the individual learners and their teachers, are to some degree relieved.
THE TM EMPIRICAL OUTCOMES MAP

EXPLORING SCIENTIFIC EVIDENCE OF SPECIFIC FACTORS RELATED TO TM

1. TRANSCENDENCE
2. COHERENCE
3. DEEP REST
4. STRESS RELEASE
5. COGNITIVE DEVELOPMENT

→ IMPROVED ACADEMIC OUTCOMES

- PSYCHOLOGICAL HEALTH
- PHYSIOLOGICAL HEALTH
- FAMILY & SOCIAL WELLBEING
- ECONOMIC SUCCESS

- SOCIETAL FACTORS / SOCIAL COHESION
<table>
<thead>
<tr>
<th>Page No.</th>
<th>BENEFIT</th>
<th>EFFECT SIZE / STRENGTH OF CORRELATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-30</td>
<td>Increased EEG Coherence</td>
<td>P&lt;0,05 (Correlation with gyrification, increased activity in both hemispheres and meditation)</td>
</tr>
<tr>
<td>31-35</td>
<td>Reduced physical and mental tiredness through deep rest; increased vitality</td>
<td>Rest 2 x greater than deepest sleep</td>
</tr>
<tr>
<td></td>
<td>Improved sleep</td>
<td>Rest 2 x greater than deepest sleep</td>
</tr>
<tr>
<td>36-41</td>
<td>Relief from stress and stress-related problems</td>
<td>Decreased Cortisol Waking Response (p&lt;0,02)</td>
</tr>
<tr>
<td>42-52</td>
<td>Mobilisation of latent reserves in the brain</td>
<td>Neurological Efficiency r=0,6</td>
</tr>
<tr>
<td></td>
<td>Increased orderliness in thinking and mental clarity</td>
<td>Field Independence -p&lt;0,0001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Focus of attention -p&lt;0,0001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decreased wavering of v p&lt;0,001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mental Efficiency p&lt;0,001</td>
</tr>
<tr>
<td></td>
<td>Growth of practical intelligence</td>
<td>(p&lt;0,001) less than 1 in 1000 chance it's wrong</td>
</tr>
<tr>
<td></td>
<td>Increased Mental Efficiency</td>
<td>p&lt;1,0</td>
</tr>
<tr>
<td></td>
<td>Increased intelligence</td>
<td>9-14 IQ point improvement over 5-year period</td>
</tr>
</tbody>
</table>
### PSYCHOLOGICAL FACTORS

<table>
<thead>
<tr>
<th>Page No.</th>
<th>Increased self-concept, self confidence</th>
<th>Self Actualisation p=0.002</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-67</td>
<td>Improved memory</td>
<td>P&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Improved Creativity</td>
<td>r=0.71</td>
</tr>
<tr>
<td></td>
<td>Enjoyment of school and desire to learn, happiness and improved mental well-being</td>
<td>Reported feelings of 'happiness' as a result of TM (p&lt;0.0001)</td>
</tr>
<tr>
<td></td>
<td>Increased self-actualisation</td>
<td>Self Actualisation p=0.002</td>
</tr>
<tr>
<td></td>
<td>Improved ability to focus attention and broader comprehension</td>
<td>Field Independence p&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Focus of attention p&lt;0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Breadth of Comprehension p&lt;0.001</td>
</tr>
</tbody>
</table>

### FAMILY AND SOCIAL FACTORS

<table>
<thead>
<tr>
<th>Page No.</th>
<th>Improved behaviour, better self discipline, more orderliness in the class-room</th>
<th>Absenteeism p&lt;0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>82-87</td>
<td></td>
<td>Rule infraction p&lt;0.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suspension Days p&lt;0.04</td>
</tr>
<tr>
<td></td>
<td>Improved Moral Reasoning, moral development and integrity</td>
<td>r=0.63</td>
</tr>
<tr>
<td>Page No.</td>
<td>BENEFIT</td>
<td>EFFECT SIZE / STRENGTH OF CORRELATION</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>DEEP REST</strong></td>
<td></td>
</tr>
<tr>
<td>31-35</td>
<td>Deep rest, increased energy and vitality, reduced tiredness</td>
<td>P&lt;0.05 (Correlation with gyrification, increased activity in both hemispheres and meditation)</td>
</tr>
<tr>
<td></td>
<td><strong>STRESS RELEASE</strong></td>
<td></td>
</tr>
<tr>
<td>36-41</td>
<td>Reduced stress and anxiety</td>
<td>Rest 2 x greater than deepest sleep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rest 2 x greater than deepest sleep</td>
</tr>
<tr>
<td></td>
<td><strong>COGNITIVE DEVELOPMENT</strong></td>
<td></td>
</tr>
<tr>
<td>42-52</td>
<td>Improved Creativity</td>
<td>p = .001</td>
</tr>
<tr>
<td></td>
<td>Improved Memory</td>
<td>p &lt; 0.001</td>
</tr>
<tr>
<td></td>
<td>Growth of practical intelligence</td>
<td>p &lt; 0.0001</td>
</tr>
<tr>
<td></td>
<td><strong>PSYCHOLOGICAL FACTORS</strong></td>
<td></td>
</tr>
<tr>
<td>53-67</td>
<td>Improved mental well-being, improved mental health, reduced mental illness and reduced disease of the nervous system</td>
<td>Increased emotional stability p=0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improved self awareness p=0.01</td>
</tr>
<tr>
<td></td>
<td>Help in reducing alcohol or drug dependency among teachers</td>
<td>Reduced days of alcohol use p=0.003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5 to 8 times better than other treatments</td>
</tr>
<tr>
<td>Page No.</td>
<td>PSYCHOLOGICAL FACTORS</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------</td>
<td></td>
</tr>
<tr>
<td>68-81</td>
<td>Decreased physical illness and incidence of disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduced mortality due to Cardiovascular issues of 48%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>87% reduction in cardiovascular disease prevalence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>55% reduction in cancer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80% improvement in metabolism</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30% reduction in infectious diseases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reversal of the ageing process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S-T practitioners - 5 years younger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L-T practitioners - 12 years younger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduced Teacher Burnout</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&lt;0.02</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FAMILY AND SOCIAL FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>82-87</td>
</tr>
<tr>
<td>Improved relationship with other teachers, school management.</td>
</tr>
<tr>
<td>Improved relationships with students</td>
</tr>
<tr>
<td>Improved family relationships</td>
</tr>
<tr>
<td>Improved capacity of warm interpersonal relationships</td>
</tr>
<tr>
<td>Improved integration with the social environment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECONOMIC / WORKPLACE FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>87-90</td>
</tr>
<tr>
<td>More inner stability and reliability of teachers creating a healthy work environment</td>
</tr>
<tr>
<td>Moral Reasoning, IQ Emotional Stability p=0.005</td>
</tr>
<tr>
<td>High self-esteem p=0.001</td>
</tr>
<tr>
<td>Reduced absenteeism</td>
</tr>
<tr>
<td>90% reduction 10 months after introduction to the programme to a school in Alex (1997 pilot)</td>
</tr>
</tbody>
</table>
WHAT WE CAN EXPECT TO SEE WITH IMPLEMENTATION OVER TIME:

SUMMARY OF ACADEMIC BENEFITS FOR STUDENTS

IN JUST A FEW DAYS
Improved learning ability
Greater co-operation between students
Improved behaviour
Less violence and disorder in classrooms and halls
More focused classroom environment

WITHIN A FEW MONTHS
Increased ability to focus and broad comprehension
Increased intelligence
Improved memory
More creativity
Increased tolerance
Increased self-confidence
Decreased anxiety
Improved Psychosocial Outcomes

WITHIN A YEAR
Improved marks (at least 10% improvement in aggregate within one year)
Improved intellectual performance
Increased creativity
Improved moral reasoning
Improved choice reaction time
Reduced substance abuse
MEDIUM – LONG TERM IMPACT

1. Improved academic performance - in aggregate and in every subject
2. All round improvements in performance - improvements in academic activities
3. All round improvements in performance - improvements in arts and cultural activities
4. All round improvements in performance - improvements in sports, activities
5. Reduced absenteeism and dropout
FOUR KEY META-ANALYSES: TRANSCENDENTAL MEDITATION

1. A meta-analysis published in American Psychologist reviewed 31 studies, and found that the Transcendental Meditation technique produces more than twice the level of physiological rest than is produced by simply sitting with eyes closed.

2. A meta-analysis published in the Journal of Clinical Psychology reviewed over 100 research findings, and found the Transcendental Meditation technique to produce more than twice the reduction in trait anxiety (i.e., chronic stress) than produced by any other meditation or relaxation technique.

3. A meta-analysis published in the Journal of Social Behavior and Personality showed the Transcendental Meditation program to increase self-actualisation by three times as large an effect as that of other forms of meditation or relaxation.

4. Another meta-analysis, published in Alcoholism Treatment Quarterly, showed the practice of the Transcendental Meditation programme result in a greater degree of reduction and more lasting reduction in consumption of alcohol, drugs, and cigarettes than other relaxation or preventive education programmes. The results shows that alcohol consumption was reduced by 1.5 to 8 times more than other programmes.
COHERENCE
MEDITATION AND INCREASED BRAIN ACTIVITY IN BOTH SIDES OF THE BRAIN
WHAT IS BRAIN COHERENCE?

A mathematical measure of brain connections across different areas of the brain

Measured by EEG (Electroencephalography)

“Coherence is a mathematical technique that quantifies the frequency and amplitude of the synchronicity of neuronal patterns of oscillating brain activity”.

Brain connectivity describes the networks of functional and anatomical connections across the brain. The functional network communications across the brain networks dependent on neuronal oscillations. Detection of the synchronous activation of neurons can be used to determine the wellbeing or integrity of the functional connectivity in the human brain networks. Well-connected highly synchronous functional activity can be measured by Electroencephalography (EEG) or Magnetoencephalography (MEG) and then analyzed with several types of mathematical algorithms. Coherence is one mathematical method that can be used to determine if two or more sensors, or brain regions, have similar neuronal oscillatory activity with each other.
An EEG measurement identifies wavelengths—or frequencies—of brainwaves. During ordinary waking consciousness, EEG patterns are generally scattered, disorderly, and rapidly changing.

By contrast, as the mind settles into the practice of the Transcendental Meditation technique, brainwaves tend to become rhythmic and orderly—they fall into “phase”—and move synchronously over large areas in the frontal regions of the brain. This is called EEG coherence.

Higher coherence is associated with more integrated and effective thinking and behaviour, including greater intelligence, creativity, learning ability, emotional stability, ethical and moral reasoning, self-confidence, and reduced anxiety.
<table>
<thead>
<tr>
<th>Specific Focus area of Study</th>
<th>Reference</th>
<th>URL</th>
</tr>
</thead>
</table>

**Type of study (RCT, meta study, etc)**

<table>
<thead>
<tr>
<th>Type of Study</th>
<th>Effect Size</th>
<th>Type of test (statistical)</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multivariate t-test</td>
<td>Higher Alpha coherence p=0.052, creativity (p=0.011)</td>
<td>Torrance test</td>
<td><a href="https://www.tandfonline.com/doi/abs/10.3109/00207458098995038">https://www.tandfonline.com/doi/abs/10.3109/00207458098995038</a></td>
</tr>
<tr>
<td>Longitudinal Study</td>
<td>After the two-week TM technique period, subjects showed a significant increase in frontal alpha coherence above a 0.95 threshold</td>
<td>Longitudinal Study</td>
<td><a href="https://www.tandfonline.com/doi/abs/10.3109/00207458098995038">https://www.tandfonline.com/doi/abs/10.3109/00207458098995038</a></td>
</tr>
<tr>
<td>Torrance Test of Creativity</td>
<td><em>not available</em></td>
<td><em>RCT</em> longitudinal study</td>
<td><a href="https://www.tandfonline.com/doi/abs/10.3109/00207458098995038">https://www.tandfonline.com/doi/abs/10.3109/00207458098995038</a></td>
</tr>
<tr>
<td>EEG</td>
<td>Increased coherence (p=0.001)</td>
<td>EEG</td>
<td><a href="https://www.tandfonline.com/doi/abs/10.3109/00207458098995038">https://www.tandfonline.com/doi/abs/10.3109/00207458098995038</a></td>
</tr>
<tr>
<td>Reduced Neuroticism p=0.032; increased mental health (p=0.036); decreased anxiety (p=0.006)</td>
<td>Psychometric measures of mental health (Tennessee Self-Concept Empirical Scales and Spielberger State-Trait Anxiety Inventory) and IQ</td>
<td>Biological Psychology</td>
<td><a href="https://www.tandfonline.com/doi/abs/10.3109/00207458098995038">https://www.tandfonline.com/doi/abs/10.3109/00207458098995038</a></td>
</tr>
</tbody>
</table>

**Specific Focus area of Study**

- **EEG Phase Coherence, Pure Consciousness, Creativity, and TM—Sidhi Experiences**
- **Short-Term Longitudinal Effects of the Transcendental Meditation Technique on EEG Power and Coherence**
- **EEG coherence during the Transcendental Meditation technique**
- **Cross-sectional and longitudinal study of effects of transcendental meditation practice on interhemispheric frontal asymmetry and frontal coherence**
- **Patterns of EEG coherence, power, and contingent negative variation characterize the integration of transcendental and waking states**

**Reference**

- Michael C. Dillbeck & Edward C. Bronson (1981)
- Carolyn Gaylord, David Orme-Johnson & Frederick Travis (1989)
TM INCREASES BRAIN COHERENCE:
THIS LEADS TO A RANGE OF OTHER KEY OUTCOMES AND BENEFITS

Several studies have shown the effect of TM in increasing EEG coherence which in turn is significantly correlated with the ability to learn new concepts, improved verbal and analytical thinking, increased intelligence and increased neurological efficiency.

Applied to SA Education System:
- Improved Teacher Confidence
- Decreased anxiety/neuroticism
- Increased Learner Outcomes
- Greater Acquisition of C21 skills (creativity, ingenuity)

An r-value shows the strength and direction of the statistical correlation (where r=1 is a perfect linear positive correlation, and r=-1 is a perfect linear negative correlation).

<table>
<thead>
<tr>
<th>Effect</th>
<th>EEG Phase Coherence, Pure Consciousness, Creativity, and Tm—Sidhi Experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td><a href="https://www.tandfonline.com/doi/abs/10.3109/00207458108985804">https://www.tandfonline.com/doi/abs/10.3109/00207458108985804</a></td>
</tr>
<tr>
<td>Journal</td>
<td>International Journal of Neuroscience</td>
</tr>
<tr>
<td>Effect Size</td>
<td>Higher Alpha coherence p=0.052, creativity (p=0.011)</td>
</tr>
<tr>
<td>Type of Test</td>
<td>Torrance test</td>
</tr>
<tr>
<td>Type of Study</td>
<td>Multivariate t-test</td>
</tr>
</tbody>
</table>
FRONTAL BRAIN COHERENCE
THROUGH THE TRANSCENDENTAL MEDITATION PROGRAM

<table>
<thead>
<tr>
<th>Effect</th>
<th>Short-Term Longitudinal Effects of the Transcendental Meditation Technique on EEG Power and Coherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td><a href="https://www.tandfonline.com/doi/abs/10.3109/00207458108985827">https://www.tandfonline.com/doi/abs/10.3109/00207458108985827</a></td>
</tr>
<tr>
<td>Journal</td>
<td>International Journal of Neuroscience</td>
</tr>
<tr>
<td>Effect Size</td>
<td>After the two-week TM technique period, subjects showed a significant increase in frontal alpha coherence above a 0.95 threshold</td>
</tr>
<tr>
<td>Type of Test</td>
<td>EEG</td>
</tr>
<tr>
<td>Type of Study</td>
<td>Longitudinal Study</td>
</tr>
</tbody>
</table>
Higher levels of EEG coherence measured during the practice of the Transcendental Meditation technique are significantly correlated with:

- increased fluency of verbal creativity,
- increased efficiency in learning new concepts,
- more principled moral reasoning,
- higher verbal IQ,
- decreased neuroticism,
- higher academic achievement,
- clearer experiences of Transcendental Consciousness, and increased neurological efficiency, as measured by faster recovery of the H-reflex.

**Effect Frontal EEG Coherence, H-Reflex Recovery, Concept Learning, and the TM-Sidhi Program**

**Reference**

**URL**
https://www.tandfonline.com/doi/abs/10.3109/00207458108985908

**Journal**
International Journal of Neuroscience

**Effect Size**
Concept Learning ($R=0.5$)

**Type of Test**
Assessment of concept learning, EEG, H-reflex recovery

**Type of Study**
Longitudinal Study
**KEY FINDING:**

TM HAS BEEN SHOWN TO INCREASE THE ORDERLINESS IN THE BRAIN SIGNIFICANTLY OVER TIME. THIS IS CORRELATED WITH INCREASED INTELLIGENCE.

These charts show how EEG Coherence increases between and within the cerebral hemispheres during the Transcendental Meditation technique.

EEG Coherence increases in all areas of the brain when transcendental consciousness is being subjectively experienced and the breath rate slows.

In addition, EEG coherence increases even more during the advanced TM-Sidhi programme (chart not shown) and it increases longitudinally over time as a result of the practice of Transcendental Meditation.”

**INCREASING COHERENCE**

**THE DEVELOPMENT OF THE BRAIN OVER TIME**

An increase in brain coherence in the individual over time. EEG. Alpha, Beta, Theta, Delta

**Non-Meditator**  
**4 Month Meditation**  
**2 Month Meditation**  
**15 Month Meditation**

“Meditation more than anything in my life was the biggest ingredient of whatever success I’ve had” – Ray Dalio
Notice how both the Left and Right Hemispheres of the Brain light up in advanced meditators.

TM develops parts of the brain that are not normally used and develops the connections in the brain so that the student uses far more of his or her latent potential.

Mobilization of Latent Reserves in The Brain - Perhaps the most exciting finding!

This is also linked to:

- Increased brain functioning
- Increased creativity
BRAIN ACTIVITY IN DIFFERENT PARTS OF THE BRAIN RECORDED DURING DIFFERENT STATES.

Key

- prefrontal cortex
- occipital lobe
**BENEFITS OF COHERENT BRAIN FUNCTIONING**

Coherent brain functioning has been empirically shown to have an effect in a multitude of areas relating to the more effective functioning of the Human brain.

A p-value is the probability of the result being chance or coincidence. P<0.001 means that there is less than 1 in a 1000 chance that the result showing the correlation is false.


COHERENCE IMPROVES ACADEMIC OUTCOMES

- Greater brain-wave coherence, along with the many other physiological changes produced by the TM technique, suggests a unique style of neurophysiological functioning during the practice – a state of restful alertness.

- EEG coherence has been found to be correlated with higher levels of creativity, intelligence, moral reasoning, and neuromuscular efficiency, and with experiences of higher states of consciousness.

- These findings support the interpretation that the increased EEG coherence produced by the TM technique and TM- Sidhi programme indicates optimisation of brain functioning.

- This interpretation is also consistent with research demonstrating that TM improves cognitive functioning over a wide range of measures of mental ability.

A p-value is the probability of the result being chance or coincidence. P=0.002 means that there is a 1 in 2 000 chance that the result is coincidence. The probability that the results are random is between 0.1% and 5%.

References:
- Journal of Moral Education 12, no. 3 (1983): 166-73
DEEP REST
REST 2 x GREATER THAN DEEPEST SLEEP

TRANSCENDENCE \rightarrow COHERENCE

DEEP REST

STRESS RELEASE

COGNITIVE DEVELOPMENT

PSYCHOLOGICAL HEALTH
PHYSIOLOGICAL HEALTH
FAMILY & SOCIAL WELLBEING
ECONOMIC SUCCESS

SOCIETAL FACTORS / SOCIAL COHESION

IMPROVED ACADEMIC OUTCOMES
DEEP REST

Effect Reduced physical and mental tiredness through deep rest; increased vitality in a unique state of deep rest during


Journal: American Psychologist

p-value: p<0.05

Type of test: Cochran-Mantel-Haenszel method

Meta-Analysis of 32 studies

INCREASED PHYSIOLOGICAL RELAXATION

- Plasma Lactate
- Respiration Rate
- Basal GSR

Effect Size (Standard Deviations)


Rest 2 x GREATER THAN THE DEEPEST SLEEP STATE

COHERENCE IS LINKED TO A STATE OF DEEP REST AND RELAXATION WHICH HAS THERAPEUTIC BENEFITS (MENTAL AND PHYSICAL)
A STATE OF DEEP REST

REST 2 x GREATER THAN THE DEEPEST SLEEP STATE

During the practice of TM the student obtains a level of rest almost twice as deep as that of sleep. The decrease in total oxygen consumption during the Transcendental Meditation technique indicates a unique state of deep rest.

Effect: Reduced physical and mental tiredness through deep rest; increased vitality


URL: https://www.scientificamerican.com/article/the-physiology-of-meditation/

Journal: Scientific American

Effect Size: Reduction in oxygen consumption double that of sleep - rest deeper than sleep

Type of Test: Various

Type of Study: RCT
A meta-analysis (used for drawing objective conclusions from large bodies of research) of published research on physiological changes during the Transcendental Meditation technique - 31 studies in all - found that the Transcendental Meditation technique produced a significant decrease in basal skin conductance compared to eyes-closed rest, indicating profound relaxation.

Deep rest and relaxation were also indicated by greater decreases in respiration rates and plasma lactate levels compared to ordinary rest. These physiological changes occur spontaneously as the mind effortlessly settles to the state of restful alertness, Transcendental Consciousness. Meta-analysis is the preferred scientific procedure for drawing definitive conclusions from large bodies of research.
STRESS RELEASE

IMPROVED ACADEMIC OUTCOMES

TRANSCENDENCE → COHERENCE

DEEP REST

STRESS RELEASE

COGNITIVE DEVELOPMENT

PSYCHOLOGICAL HEALTH → PHYSIOLOGICAL HEALTH → FAMILY & SOCIAL WELLBEING → ECONOMIC SUCCESS

SOCIETAL FACTORS / SOCIAL COHESION
A randomized controlled study of 27 college students found that four weeks of TM practice significantly reduced the level of the major stress hormone cortisol when waking up from a night’s sleep compared to controls, indicating reduced stress.

The probability of the result being random is around 2%.
Stanford University: A meta-analysis of 146 independent studies found that the Transcendental Meditation technique is twice as effective at reducing trait anxiety when compared with concentration, contemplation or other techniques.


A p-value is the probability of the result being chance or coincidence. P<0.001 means that there is less than a 0.1% chance that the result is random.
Of our approximately 86 billion brain cells, most all are influenced by serotonin. Known by many scientists as the “happy” neurotransmitter, serotonin is key to helping relay signals from one part of the brain to another. This crucial chemical has a profound impact on our mood, contributing greatly to our overall state of well-being.

According to Princeton brain researcher Barry Jacobs, PhD, depression sets in when fewer and fewer new brain cells are created, with stress and age being the leading trigger.

University of Montreal scientists (Perreau-Linck et al) have shown that activities like mindfulness have a direct impact on the brain’s production of serotonin levels. It is thought that meditation “bathes” neurons with an array of feel-good chemicals, effectively melting away the stress that leads to low serotonin levels and depression.

In the end, meditation’s serotonin replenishing effect works to create a utopian chemical environment for the production of new brain cells, making you a happier and healthier person.
MEDITATION INCREASES SEROTONIN

<table>
<thead>
<tr>
<th>Effect</th>
<th>Increase in Serotonin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal</td>
<td>Journal of Social Behavior and Personality</td>
</tr>
<tr>
<td>Effect Size</td>
<td>p = .03</td>
</tr>
<tr>
<td>Type of Test</td>
<td>*not available</td>
</tr>
<tr>
<td>Type of Study</td>
<td>RCT</td>
</tr>
</tbody>
</table>

The probability of the results being random is 3%
COGNITIVE DEVELOPMENT

IMPROVED ACADEMIC OUTCOMES

TRANSCENDENCE → COHERENCE → DEEP REST → STRESS RELEASE → COGNITIVE DEVELOPMENT

PSYCHOLOGICAL HEALTH → PHYSIOLOGICAL HEALTH → FAMILY & SOCIAL WELLBEING → ECONOMIC SUCCESS

SOCIETAL FACTORS / SOCIAL COHESION
TM AND BRAIN DEVELOPMENT

Psychologists have said that individuals only use only a small percentage of their full potential.

TM helps the individual realise his/her potential.

TM stimulates, develops and integrates the whole brain. Results normally considered impossible, are repeatedly found in TM experiments such as increased IQ.

Empirical Evidence shows:

- Increased intelligence and cognitive ability
- Decreases in negative behaviours and
- Increases in positive behaviours leading to
- Increases in positive life outcomes

References:
- Proceedings of the International Symposium Physiological and Biochemical Basis of Brain Activity, St Petersburg, Russia, (June 22-24, 1994)
- 2nd Russian-Swedish Symposium New Research in Neurobiology, Moscow, Russia (May 19-21, 1992)
INCREASED COGNITIVE FUNCTIONING
TM INCREASED FLUID INTELLIGENCE IN STUDENTS BY 9-14 IQ POINTS

Fluid intelligence is the ability to come up with solutions in novel situations for which there is no prior learning or manual on what to do.

The probability of the results being random is 0,05%
DECREASED CHOICE REACTION TIME THROUGH THE TRANSCENDENTAL MEDITATION TECHNIQUE

The TM group started at a much faster level of choice reaction time and improved further after two years of TM practice, whereas the comparison group tended to get slower after two years.

The probability of the results being random is 0.01%.

REDUCED WAVERING OF ATTENTION:
REDUCED NOISE IN THE NERVOUS SYSTEM

Wavering of attention, measured by variability in choice reaction time, was less in the TM group and improved even further after two more years of TM practice. The comparison group tended to get worse.

The probability of the results being random is 0.01%.

INCREASED GENERAL COGNITIVE ABILITY
THROUGH THE TRANSCENDENTAL MEDITATION TECHNIQUE

Effect: Improved ability to focus attention and broader comprehension

Reference: Kam-Tim So, David W Orme-Johnson, Three randomized experiments on the longitudinal effects of the Transcendental Meditation technique on cognition, Intelligence, Volume 29, Issue 5, 2001, Pages 419-440

URL: https://www.sciencedirect.com/science/article/abs/pii/S0160289010007070

Journal: Intelligence

Effect Size: Improved Cognition (p<0.001)

Type of Test: Test for Creative Thinking-Drawing Production (TCT-DP); Constructive Thinking Inventory (CTI); Group Embedded Figures Test (GEFT); State and Trait Anxiety (STAI); Inspection Time (IT); and Culture Fair Intelligence Test (CFIT)

Type of Study: Univariate Regression, RCT

The probability of the results being random is 0.1% and 1%.
IMPROVED ABILITY TO FOCUS ATTENTION AND BROADER COMPREHENSION THROUGH THE TRANSCENDENTAL MEDITATION TECHNIQUE

Key Finding – Students practise TM are significantly more able to focus on the work at hand and on details within each section of work, while at the same time understanding the work in a holistic way.

Students’ ability to concentrate despite outside noises or other distractions is significantly increased.

The probability of the results being random is 0.1%.

Benefit for SA Education System:

- Learners have improved focus
- Learners have improved comprehension
- Improved learning outcomes
- Empowers teachers working with children more able to learn

<table>
<thead>
<tr>
<th>Effect</th>
<th>Improved ability to focus attention and broader comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4330717/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4330717/</a></td>
</tr>
<tr>
<td>Journal</td>
<td>Frontiers in systems neuroscience</td>
</tr>
<tr>
<td>Effect Size</td>
<td>The mean RTs were significantly shorter in the neutral (p &lt; 0.002), congruent (p &lt; 0.001) and incongruent (p &lt; 0.003)</td>
</tr>
<tr>
<td>Type of Test</td>
<td>color-word stroop task</td>
</tr>
<tr>
<td>Type of Study</td>
<td>RCT</td>
</tr>
</tbody>
</table>
**INCREASED FIELD INDEPENDENCE**

**Field independence** is the ability to focus attention on specific objects without being distracted by the environment of the objects.

University undergraduate students taught the TM technique (and practising regularly for three months) show significantly increased field independence from their first to fourth years shown by both broader comprehension and improved ability to focus attention. Their performance on field independence tests indicates growth in abilities that are basic to success in school, in a job, and in other areas of life.

Persons with greater field independence have the following characteristics: a greater ability to assimilate and structure information and knowledge, improved memory, greater creativity and creative expression, more stable attitudes, judgements and sentiments.

<table>
<thead>
<tr>
<th>Effect</th>
<th>Increased orderliness in thinking and mental clarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference</td>
<td>Orme-Johnson, D. W.; and Granieri, B. The effects of the Age of Enlightenment Governor Training Courses on field independence, creativity, intelligence, and behavioral flexibility. Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Switzerland, 1977.</td>
</tr>
<tr>
<td>URL</td>
<td><a href="https://www.miu.edu/assets/collected_papers/orme1977e1coll1-103.pdf">https://www.miu.edu/assets/collected_papers/orme1977e1coll1-103.pdf</a></td>
</tr>
<tr>
<td>Journal</td>
<td>Centre for the Study of Higher States of Consciousness, Maharishi’s European Research University</td>
</tr>
<tr>
<td>Effect Size</td>
<td>Field Independence – $p&lt;0.0001$</td>
</tr>
<tr>
<td>Type of Test</td>
<td><em>various</em></td>
</tr>
<tr>
<td>Type of Study</td>
<td>Controlled, longitudinal study</td>
</tr>
</tbody>
</table>
GROWTH IN FIELD INDEPENDENCE
IN UNIVERSITY STUDENTS IS REMARKABLE BECAUSE IT WAS PREVIOUSLY THOUGHT THAT THESE BASIC PERCEPTUAL ABILITIES DID NOT IMPROVE BEYOND EARLY ADULTHOOD.

Associated Findings

Improved Memory
References:

Higher Levels of Moral Maturity

Increased Field Independence – Increased Resistance to Distraction and Social Pressure
References:

Greater Intellectual and Scientific Orientation
References:
Western Psychologist 4(1974): 104-111

Increased Self-Development
References:

Increased Self-Confidence and Self-Actualisation
References:
College Student Journal 15(1981): 140-146

Increased Academic Achievement
Reference:
1. Education 107(1986): 49-54

Decreased Dropout Rate and Increased Self-Actualisation
Among Economically Deprived Adolescents.

Conclusion: By providing the experience of Transcendental Consciousness, the TM programme unfolds the latent genius of every student. As one's mind becomes alert and comprehensive, increasingly thought and action are nourishing and progressive for oneself and others, and one makes fewer and fewer mistakes in life – spontaneously one lives more in harmony with natural law.
**IMPROVED MEMORY**

Squire et al published a paper with the American Psychological Association illustrating just how critical the “hippocampus” is to learning and memory.

Meditation is proven to prevent the shrinking hippocampus, leading to improved memory

Greenberg et al at Harvard with Lazar, S (2020) conducted brain imaging research on a group of 16 before and after learning and practicing medication for 8 weeks. “We found that the hippocampus is sensitive to cortisol, is negatively impacted by stress hormones, and gets smaller”.

Reducing stress prevents this and guard against depression “Among a long list of awe-inspiring healthy brain discoveries, her research shows that meditation dramatically increases “hippocampal cortical thickness,” with magnitude determined by experience.” (Eco institute)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Improved Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal</td>
<td>Centre for the Study of Higher States of Consciousness/Maharishi European Research University International journal of psychophysiology</td>
</tr>
<tr>
<td>Effect Size</td>
<td>Field Independence – p&lt;0.0001Focus of attention p=0.001Decreased wavering of attention p=0.001Mental Efficiency p=0.001</td>
</tr>
<tr>
<td>Type of Test</td>
<td>various ANOVAs</td>
</tr>
<tr>
<td>Type of Study</td>
<td>Controlled, longitudinal study RCT</td>
</tr>
</tbody>
</table>

The probability of the results being random is 0.1%.
PSYCHOLOGICAL HEALTH

TRANSCENDENCE → COHERRENCE

DEEP REST

STRESS RELEASE

COGNITIVE DEVELOPMENT

IMPROVED ACADEMIC OUTCOMES

PSYCHOLOGICAL HEALTH

PHYSIOLOGICAL HEALTH

FAMILY & SOCIAL WELLBEING

ECONOMIC SUCCESS

SOCIETAL FACTORS / SOCIAL COHESION
STUDY ON GAMMA BRAIN WAVES

Empirical Evidence of reduced stress, and increased feelings of happiness and love – Effects greater for TM practitioners (p<0.02)
An example of Brain Plasticity

Neurofeedback-Enhanced Gamma Brainwaves from the Prefrontal Cortical Region of Meditators

**DESIGN:** This was a controlled pilot study; it involved a single session per subject.

**SETTING:** The research was conducted in a nonprofit laboratory in the United States.

**SUBJECTS:** There were 12 adults in 2 groups (N=12): 6 practitioners of Transcendental Meditation and six controls.

**MEASURES:** The measures were self-assessed inner experiences and measurements of clarified gamma output at the prefrontal cortical region.

Results: (1) Self-assessed descriptions were comparable for both groups; (2) the associations of 16 supplied descriptors with the initial neurofeedback experience were comparable for both groups and showed highest scores for “happy” (p<0.0001) and “loving” (p<0.0001), and lowest scores for “stressed” (p<0.0001) and “disappointed” (p<0.0001); (3) baseline measures were comparable for both groups; (4) both groups were able to increase gamma brainwaves using neurofeedback (p<0.01); and (5) meditators produced greater increases over controls (p<0.02).

Conclusions: The inner experience associated with increased clarified gamma amplitude from the prefrontal cortex apparently involves positive emotions of happiness and love, along with reduced stress. Transcendental Meditation practitioners achieved greater increases in the gamma band from the prefrontal cortical region over controls during an initial neurofeedback session.

DECREASED PTSD IN VETERANS PUBLISHED IN THE LANCET PSYCHIATRY

Reduction in PTSD Symptoms and Depression: Comparison of Transcendental Meditation, Prolonged Exposure and Health Education

- Transcendental Meditation
- Prolonged Exposure
- Health Education

Effect Sizes
- Small: .20
- Medium: .50
- Large: .80

Within-Group Unadjusted Effect Sizes


Increased Gramma Brain Waves


URL https://academic.oup.com/milmed/article/183/1-2/e144/4781643


Journal Military Medicine Journal of Traumatic Stress Lancet Psychiatry

Effect Size p < 0.0001 reduced stress (p=0.0001) d = 4.05 p=0.0002

Type of Test PTSD Checklist-Civilian (PCL-S) questionnaires The Posttraumatic Stress Disorder Checklist-Civilian (PCL-C) CAPS, CAPS Interview PTSD PCL-M Self-Report PTSD PHQ-9 Depression

Type of Study RCT RCT
DECREASED PTSD SYMPTOMS IN SOUTH-AFRICAN COLLEGE STUDENTS

The probability of the results being random is 0.1%.

Psychological Reports

- TM Group
- Comparison Group


URL: https://journals.sagepub.com/doi/abs/10.1177/0033294119828036
DECREASED PTSD IN FEMALE PRISON INMATES

RANDOMIZED CONTROLLED TRIAL

The probability of the results being random is between 3% and 10%.

Poster and Abstract: (abstract text)

<table>
<thead>
<tr>
<th>Trauma Symptom Checklist Adjusted Posttest Means (+SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Trauma</td>
</tr>
<tr>
<td>Intrusion</td>
</tr>
<tr>
<td>Avoidance</td>
</tr>
<tr>
<td>Hyperarousal</td>
</tr>
</tbody>
</table>

Controls

Transcendental Meditation

Decrease in PTSD

Reference

URL

Journal
Journal of Traumatic Stress

Effect Size
$d = 4.05$

Type of Test
The Posttraumatic Stress Disorder Checklist–Civilian (PCL-C)

Type of Study
RCT

Intrusion
Avoidance
Hyperarousal

$\text{p}<.04$
$\text{p}<.03$
$\text{p}<.1$
$\text{p}<.04$
DECREASED SEVERITY OF PTSD AND ANXIETY ALONG WITH DECREASED USE OF PSYCHOTROPIC MEDICATION THROUGH THE TRANSCENDENTAL MEDITATION TECHNIQUE

Effect Size

<table>
<thead>
<tr>
<th></th>
<th>Decrease in PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p</strong></td>
<td>&lt;0.002 after 3 months</td>
</tr>
</tbody>
</table>

**Reference**

**URL**
https://www.researchgate.net/publication/289499363_Impact_of_Transcendental_Meditation_on_Psychotropic_Medications_Use_Among_Active_Duty_Military_Service_Members_With_Anxiety_and_PTSD

**Journal**
Military Medicine

**Graph**

- **Y-axis:** Proportion change of symptoms severity from baseline
- **X-axis:** Months Since Initial Measurement
- **Legend:**
  - TM (Transcendental Meditation)
  - Control
- **Graph Title:** Decrease in PTSD
- **Data points:**
  - Baseline: 1.15
  - 3 months: 1.05
  - 6 months: 1.00

**Additional Details:**
- *p* < .0001
DECREASED PTSD SYMPTOMS IN CONGOLESE WAR REFUGEES
THROUGH THE TRANSCENDENTAL MEDITATION TECHNIQUE

TM reduces PTSD symptoms within 10 days, and after 30 days they decline to non-symptomatic levels.

Key finding - A meta-analysis published in the Journal of Social Behavior and Personality showed the Transcendental Meditation programme increased self-actualization by three times as large an effect as that of other forms of meditation or relaxation.

Statistical meta-analysis of all available studies (42 independent outcomes) indicated that the effect of the Transcendental Meditation programme on increasing self-actualisation is much greater than concentration, contemplation, or relaxation techniques.

Self-actualisation refers to realising more of one’s inner potential, expressed in every area of life: integration and stability of personality, self-regard, emotional maturity, capacity for warm interpersonal relationships, and adaptive response to challenges.

Statistical meta-analysis of all available research (42 independent study results) indicated that Transcendental Meditation practice increases self-actualisation (development of one’s full potential) by about three times as much as procedures of contemplation, concentration, or other techniques.

**REDUCTION IN ALCOHOL USE AND SUBSTANCE ABUSE**

Key Finding – A meta-analysis, published in Alcoholism Treatment Quarterly, showed the practice of the Transcendental Meditation programme to result in a greater degree of reduction and more lasting reduction in consumption of alcohol, drugs, and cigarettes than other relaxation or preventive education programmes with this not reducing over time provided the individual is regular with the practice of the meditation.

The probability of the results being random is between 0.1% and 5%

Statistical meta-analysis of all available research (42 independent study results) indicated that Transcendental Meditation practice increases self-actualisation (development of one’s full potential) by about three times as much as procedures of contemplation, concentration, or other techniques.

FINDINGS

A random sample of practitioners of the Transcendental Meditation programme and matched control subjects responded to a questionnaire about their substance usage habits.

After an average of 19 months practising the TM programme, usage levels of all substances declined significantly among TM participants, while those of controls did not.

Length of time meditating and regularity of meditation were positively correlated with decreased substance usage.

INTERPRETATION

• The TM programme was associated with significant decreases in the use of a variety of substances – prescribed and non-prescribed, addictive and non-addictive, legal and illegal.

• These changes occurred spontaneously – the TM programme does not involve restrictions in lifestyle or behaviour.

• Transcendental Meditation has been found to reduce negative psychological traits, while simultaneously increasing positive traits that are related to drug usage.

• Research has also found that TM develops a more orderly style of neurophysiological functioning that enables meditators to respond more effectively to stressful situations.

• These results support the hypothesis that the TM technique cultures a balanced state of physiological and psychological functioning, in which potentially detrimental behaviour is naturally avoided without strain or effort.
QUALITATIVE FINDINGS
IN SOUTH AFRICAN SCHOOLS AND AROUND THE WORLD
REDUCED ALCOHOL DEPENDENCY

“I was an alcoholic. For most of my adult life I’ve been unable to sleep at night without drinking something to help me fall asleep. Sometimes as much as two bottles of whiskey before I would pass out. After I learned to meditate, I sat at home the first evening next to my bed. I had just finished meditating and then the thought came to have a drink.

I poured it out and just looked at it. I don’t know why but for the first time I didn’t want this drink. I felt too pure after meditation. And that’s been the case ever since – it’s just that I can’t bear to pollute my body like that any more. Once thing more, is that now I just fall asleep every night without trying.”

H.O.D . – Secondary School
DECREASED STRESS, DECREASED CRAVING FOR ALCOHOL AND HEAVY DRINKING

ONLY 25% OF MEDITATORS RETURNED TO DAILY DRINKING COMPARED WITH 59% OF NON-MEDITATORS

- Reduced Days of Alcohol Use
- Fewer Days of heavy Drinking
- Twice a day TM
- Reduced Stress
- Decreased Craving
- Decreased Craving for Alcohol

Reduced Days of Alcohol Use, and reduced heavy drinking

- URL: https://pubmed.ncbi.nlm.nih.gov/29471923/
- Journal: Journal of substance abuse treatment
- Effect Size: heavy drinking post-discharge (p < .001); return to any drinking (p = .02)
- Type of Test: Neural imaging - MRI
- Type of Study: RCT

The probability of the results being random is between 0.3% and 5%
A comparison of the results of several statistical meta-analyses indicate that the Transcendental Meditation technique produces significantly larger reductions in tobacco, alcohol, and non-prescribed drug use than standard effects of conventional programs typically fall off rapidly within three months, the effect of TM increase over time.

Findings from a study presented recently, “Exploring the Science of Meditation on Trauma, Stress and the Brain”

Video of the event found here
And a summary of presentations here

The probability of the results being random is 0.06% for tobacco and 0.09% for drug abuse
REDUCTION IN CIGARETTE USE: QUITTING SMOKING

BACKGROUND FACTS: Cigarette smoking causes roughly one in every five deaths in the US. Life expectancy for smokers is at least 10 years shorter than for non-smokers.

KEY STUDY: 226 smokers learning the TM technique and 850 who didn’t. All subjects were asked to complete a questionnaire on their smoking habits. After 20-24 months a follow up questionnaire was undertaken, both on smoking habits and the regularity of Transcendental Meditation practice.

FINDINGS: 51% of those fully adherent to TM practice had quit smoking and an additional 30% had decreased the number smoked daily by at least 5 cigarettes. For those partially adherent to Transcendental Meditation practice, these numbers were respectively 21% and 34%. In the non-TM group, 21% had quit smoking and 12% had reduced the number of cigarettes smoked daily by at least 5.
PHYSIOLOGICAL HEALTH

TRANSCENDENCE → COHERENCE

DEEP REST

STRESS RELEASE

COGNITIVE DEVELOPMENT

IMPROVED ACADEMIC OUTCOMES

PSYCHOLOGICAL HEALTH

PHYSIOLOGICAL HEALTH

FAMILY & SOCIAL WELLBEING

ECONOMIC SUCCESS

SOCIETAL FACTORS / SOCIAL COHESION
MEDITATION STRENGTHENS THE PRE-FRONTAL CORTEX

HA landmark study by Harvard neuroscientist Dr. Sara Lazar

Showed that the brains of meditators had remarkably more “prefrontal cortex gray matter thickness” — with degree directly linked to level of meditation experience.

Lazar found that people who meditate don’t show a decline in the thickness of the prefrontal cortex which usually comes with age.

In other words, the more you practice meditation, the stronger & better your prefrontal cortex, the greater your emotional well-being and balance.

Just one of many studies illustrating the same thing: researchers continually find meditation to increase intelligence, happiness, and good health”.

The more you practice meditation, the stronger & better your prefrontal cortex, the greater your emotional well-being and balance. If you want to rewire your brain for happiness while freeing yourself from the chains of depression, meditation is key.
“Neuroimaging research indicates that human intellectual ability is related to brain structure including the thickness of the cerebral cortex. Most studies indicate that general intelligence is positively associated with cortical thickness in areas of association cortex distributed throughout both brain hemispheres.”

Associations between cortical thickness and general intelligence in children, adolescents and young adults. Menary et al.

“The thickness of the cortex is of great interest in both normal development as well as a wide variety of neurodegenerative and psychiatric disorders.”

Measuring the thickness of the human cerebral cortex from magnetic resonance images. Fischl and Dale.
MEDITATION SIGNIFICANTLY CORRELATED WITH INCREASED GYRIFICATION

Meditation increases brain size/surface area by making its outward features (known as “gyri”) more grooved, wrinkled, ridged, and folded. This process of “gyrification” is a bit like stuffing your whole wardrobe into one tiny suitcase. Don’t worry, it’s a very good thing. We actually want our brain to look like a super-complex maze.

The more intricate and detailed we make its outward features (through neuroplasticity), the further we get from “smooth-brained” lower animals. In this way, harnessing the power of meditation to “pack-in” loads of gray matter not only “spring-loads” our brain power, but also slingshots our place on the evolutionary timeline. Darwin would approve.

Back to fluid intelligence. Where does “fluidly-intelligent” activity occur in the brain? In the thin, outermost surface layers (of the cerebral cortex, especially). On the edges. Then, like a compressed spring, a brain with compact outward features would catapult this “MacGyver-like” ability.

For meditators, with their grooved, wrinkled, and ridged brain features all “packed in nice and tight” (of the cerebral cortex, especially) — their brains are naturally wired for high fluid intelligence. “All that brain” stuffed into one cranium. That’s the magic.
POSITIVE CORRELATION BETWEEN YEARS MEDITATING AND GYRIFICATION

Shown are correlations at $p \leq 0.05$ (upper panel) and $p \leq 0.01$ (lower panel), uncorrected for multiple comparisons. The color bar encodes significance ($T$). Areas with positive correlations (i.e., more meditation years link with more gyrification) are depicted in yellow/orange; negative correlations (i.e., more meditation years link with less gyrification) are depicted in cyan. Callosal, subcallosal, and midbrain regions have been excluded on the medial surface maps. The red circle indicates the global maximum. LH, left hemisphere; RH, right hemisphere.
STRESS REDUCTION IN PATIENTS WITH HIGH BLOOD PRESSURE


Journal Current Hypertension Reports

Effect Size P = 0.002

Type of Study Meta-Analysis

The probability of the results being random is 0.2%
HEALTH INSURANCE STATISTICS: FEWER HOSPITAL ADMISSIONS IN ALL DISEASE CATEGORIES THROUGH THE TRANSCENDENTAL MEDITATION TECHNIQUE

Fewer Hospital Admissions for All Disease Categories through the Transcendental Meditation technique

TM group was -30.6% lower than the norm for the category of Mental Health/Substance Abuse, which includes anxiety and PTSD.

This study of 2000 TM practitioners over a five-year period found reduced hospital admissions in all categories of disease for TM, compared to the norm.
IMMUNITY

TM INCREASES WHITE BLOOD CELLS THAT DEFEND THE BODY FROM INFECTION AND CANCER.

The probability of the results being random is less than 5%

* CD3+CD4−CD8+ lymphocytes

Reference

URL
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4097901/

Journal
CD3+CD4−CD8+ lymphocytes (P < 0.05), B lymphocytes (P < 0.01) and natural killer cells (P < 0.01)

Effect Size
*automated quantitative hematology analyzer *flow cytometry

Type of Study
RCT
HEART DISEASE – 48% REDUCTION IN TM GROUP

**Background facts:** Heart disease accounts for 1 in 4 deaths in the US.

Coronary heart disease alone costs the United States $108.9 billion each year.


**Key study:** 201 black people with coronary heart disease were evaluated. The subjects’ ethnicity was selected as black people in the US are more likely to suffer from heart disease. The subjects were split between two groups; TM and traditional health education.

**Findings:** During an average follow-up of 5.4 years, the consequences of coronary heart disease (mortality, myocardial infarctions, or stroke) for the TM group was reduced by 48%.

<table>
<thead>
<tr>
<th>Increased white blood cell count (improved immunity)</th>
</tr>
</thead>
</table>

| Journal | Cardiology Review |
| Effect Size | 48% reduction |
| Type of Study | Meta-Analysis |
OTHER STUDIES ON HEALTH BENEFITS

Heart Disease (p = 0.05)

"Meditation protects against heart disease. One study of 40 older adults found that the 8-week MBSR training reduced concentrations of the marker C-reactive protein, which is associated with the development of heart disease." https://pubmed.ncbi.nlm.nih.gov/28963100/ (American Heart Association)

immune System

The same study (above) found drop in the group of genes that activate inflammation and are part of the body’s immune response Reduced Hypertension (p = 0.008 reduction in diastolic)

This study found that meditation practice resulted in blood pressure

This Study shows the mechanism through which this can happen, reducing stress, and decreasing anxiety. They specifically noticed differences in gene expression over the period, thereby establishing the biological pathways for improvement.

A meta-analysis published in the Journal of Human Hypertension used an RCT of TM as an intervention for High blood pressure. "TM had greater effects among individuals with higher BP (P<0.05)

Slowed Disease Progression of HIV

A 2009 study used a small Randomised Control Trial which shows that Meditation buffered the CD4+ T lymphocyte declines (p=0.6)
MEDITATION’S ANTI-AGING PROPERTIES

Protects against the degeneration of Chromosomes

30% more activity of the enzyme telomerase

TIME reports: “Telomerase is responsible for repairing telomeres, the structures located on the ends chromosomes, which, like the plastic aglets at the tips of shoelaces, prevent the chromosome from unraveling.”

Reduced stress appears to be the mechanism through which telomerase is preserved

| Journal | Journal of Personality and Social Psychology |
| Effect Size | Not available |
| Type of Study | RCT |


HOW MEDITATION UNEXPRESSES CANCER

While we all have an at-birth set of genes, there is a layer above our DNA sequence which is ultimately responsible for which genes get expressed and which ones stay dormant.

Medication can affect Gene Expression

Empirical Research shows how TM can alter neural, behaviourual and biochemical processes.

Dr. Dean Ornish and colleagues at the University of California, San Francisco had a group of low-risk prostate cancer survivors practice an hour long meditative breathing exercise. What did they find?

By decreasing the expression of cancer associated genes (RAN, RAB14, & RAB8A), they discovered that meditation could actually “molecularly mitigate” and “silence” the processes which play a role in developing cancer.

From Another Study: Found “reduced expression of histone deacetylase genes (HDAC 2, 3 and 9), alterations in global modification of histones (H4ac; H3K4me3) and decreased expression of pro-inflammatory genes (RIPK2 and COX2) in meditators compared with controls. ”

Mindfulness had exerted powerful “global influence” (histone modification) on the “chief regulators” (H4 pan-acetyl and histone H3 trim ethyl Lys4) responsible for cancerous tumor formation and development.

| Cancer |
| Journal | Integrative Cancer Therapies |
| Effect Size | *FACT-B total score (P = .037); *Emotional well-being; (P = .046); *Social well-being (P = .003); *subscales SF-36 mental health and vitality scales |
| Type of Test | *Functional Assessment of Cancer Therapy-Breast (FACT-B), *Functional Assessment of Chronic Illness Therapy- Spiritual Well-Being (FACIT-SP), *Short-Form (SF)-36 mental health and vitality scales |
| Type of Study | RCT |

“World-First Evidence Suggests That Meditation Alters Cancer Survivors’ Cells”
FAMILY AND SOCIAL WELLBEING

IMPROVED ACADEMIC OUTCOMES

TRANSCENDENCE → COHERENCE → DEEP REST → STRESS RELEASE → COGNITIVE DEVELOPMENT → IMPROVED ACADEMIC OUTCOMES

- PSYCHOLOGICAL HEALTH
- PHYSIOLOGICAL HEALTH
- FAMILY & SOCIAL WELLBEING
- ECONOMIC SUCCESS

SOCIETAL FACTORS / SOCIAL COHESION
The probability of the results being random is less than 5%.
TOLERANCE INCREASES THROUGH THE TRANSCENDENTAL MEDITATION TECHNIQUE

Reference

URL

Effect Size
p < 0.01

Type of study
Qualitative

Change in scale score
Jackson Personality Inventory

Controls
Transcendental Meditation

p < 0.1

Key Finding - When teachers practise the TM programme regularly their relationships with fellow teachers, with students and with their management have been found to improve significantly.

In a 1997 – 1999 implementation of the TM technique in schools, a study found significant improvements in relationships with co-workers and supervisors, a decrease in climb orientation, and increased productivity, after an average of 11 months practising the Transcendental Meditation programme in comparison to control subjects. A study with several control groups replicated these results and found that the degree of improvement was correlated with the length of time practising TM, and that administrators and employees both benefited from the TM programme.
ECONOMIC SUCCESS

TRANSCENDENCE → COHERENCE

DEEP REST

STRESS RELEASE

COGNITIVE DEVELOPMENT

PSYCHOLOGICAL HEALTH

PHYSIOLOGICAL HEALTH

FAMILY & SOCIAL WELLBEING

SOCIETAL FACTORS / SOCIAL COHESION

IMPROVED ACADEMIC OUTCOMES
INCREASED EFFICIENCY AND PRODUCTIVITY RELATED TO PRACTICING TM

Key Finding: Increased job satisfaction, increased performance and decreased desire to change jobs (p<0.01)

Subjects practising the Transcendental Meditation programme an average of 11 months showed significant improvements at work compared with members of a control group.

Study used 6 measures of productivity. Job performance and job satisfaction increased, while the desire to change jobs decreased.

Practicing TM improved relationships with co-workers and supervisors.

The results of this research were replicated in a study with several control groups which also found significant improvements was found to correlate with the number of months of participation in the TM programme, and people at every level of the organization benefited from practising TM.

<table>
<thead>
<tr>
<th></th>
<th>Increased Job Satisfaction</th>
<th>Increased Job Performance</th>
<th>Decreased Desire to Change Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td><a href="https://journals.aom.org/doi/abs/10.5465/254990">https://journals.aom.org/doi/abs/10.5465/254990</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal</td>
<td><a href="https://journals.aom.org/doi/abs/10.5465/254990">https://journals.aom.org/doi/abs/10.5465/254990</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect Size</td>
<td>p&lt;0.01</td>
<td>p&lt;0.01</td>
<td>p&lt;0.05</td>
</tr>
</tbody>
</table>

Academy of Management Journal
INCREASED JOB SATISFACTION AND BETTER WORKING RELATIONSHIPS FOR THOSE PRACTICING TM

Reference

URL https://www.miu.edu/assets/collected_papers/frie1975e1coll1-97.pdf

Effects | Increased job satisfaction | Increased job performance | Improved relationships with supervisors | Improved relationships with co-workers
--- | --- | --- | --- | ---
URL | https://www.miu.edu/assets/collected_papers/frie1975e1coll1-97.pdf
Effect Size | p<0.05 | p<0.05 | p<0.05 | p<0.05
Type of test | multivariate, t-test
Type of study | RCT | RCT | RCT | RCT
SOCIAL COHESION

TRANSCENDENCE → COHERENCE

DEEP REST

STRESS RELEASE

COGNITIVE DEVELOPMENT

IMPROVED ACADEMIC OUTCOMES

PSYCHOLOGICAL HEALTH

PHYSIOLOGICAL HEALTH

FAMILY & SOCIAL WELLBEING

ECONOMIC SUCCESS

SOCIETAL FACTORS / SOCIAL COHESION
BENEFITS FOR COMMUNITIES

“With the new acquired attitude and behaviour my children are beginning to be more relaxed too.

Meditation proves to be “infectious” too.

I am now energetic, and full of life. I am very happy to be experiencing this feeling, of the New Nomakhosazana. Thanks to meditation I am now in full control of my life, and self.”

Nomakhosazana, Teacher - Alexandra High.
THE TEMPOROPARIETAL JUNCTION (TPJ) AND EQ

- Researchers have shown the importance of the TPJ for the development of EQ - a measure of emotional intelligence requires for improved inter-personal and pro-social skills. (Barbey et al)

- “A landmark finding, the brain map imaging showed one particular region, the “temporoparietal junction (TPJ),” to be especially important. Dubbed the so called EQ “command and control center,” figuring out how to strengthen this area of the brain would, in effect, power up emotional intelligence.” (ecoinstitute)

- A 2016 research study (Yang et al) used fMRI imaging before and after 40 days of meditation training. Anxiety was reduced as was depression, but the process also significantly increased the “internal consistency” of their temporoparietal junction (TPJ). (ecoinstitute)

- Activated TPJ Benefits: ▲Emotional Intelligence | ▲Altruism | ▲Motivation | ▲Empathy | ▲Better Relationships | ▲Conscientiousness | ▲Self-Awareness | ▲Information Processing | ▲Perception | ▲Focus | ▲Written Language | ▲Spoken Language | ▲Reading People | ▲Emotional Balance | ▲Social Anxiety |
REDUCES CONFLICT WITH LARGE GROUPS OF MEDITATORS

• Study found a significant effect in rates of reduction of homicide and violent crime using a quasi experimental design. (Dilbeck et al)

• The study found a 28.4% reduction in murders from 2007 - 2010

![Graph showing monthly VCR data with a significant drop in 2007-2010](Figure2)
REDUCTION IN INTERNATIONAL CONFLICT WHEN LARGE GROUPS OF MEDITATORS

- On three occasions when there were groups of 8,000 TM and TM-Sidhi participants, international conflicts decreased approximately 30%.

- On three occasions during 1981 to 1985, groups of 7,000-8,000 were formed for short periods, ranging in length from 8 to 21 days.


COLLECTIVE CONSCIOUSNESS AND SOCIETAL VIOLENCE

Study has found a 72% drop in terrorism (p<0.025) and a 32% drop in international conflict (p values from <0.005 to <0.025) during large assemblies of meditators.

IMPROVED ACADEMIC OUTCOMES

IMPROVED ACADEMIC OUTCOMES

TRANSCENDENCE

COHERENCE

DEEP REST

STRESS RELEASE

COGNITIVE DEVELOPMENT

PSYCHOLOGICAL HEALTH

PHYSIOLOGICAL HEALTH

FAMILY & SOCIAL WELLBEING

ECONOMIC SUCCESS

SOCIETAL FACTORS / SOCIAL COHESION
IMPROVED ACADEMIC PERFORMANCE

THERE ARE MULTIPLE STUDIES SHOWING IMPROVED ACADEMIC OUTCOMES. A SAMPLE ARE DRAWN FROM ACADEMIC JOURNALS.

A p-value is the probability of the result being chance or coincidence. P<0.001 means that there is less than 1 in a 1000 chance that the result showing the correlation is false.

<table>
<thead>
<tr>
<th>Reduced Dropout</th>
<th>Increased Math Achievement</th>
<th>Increased English Achievement</th>
<th>Increased Graduation Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td><a href="https://eric.ed.gov/?id=EJ996375">https://eric.ed.gov/?id=EJ996375</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal</td>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>p&lt;0.001, p&lt;0.001, p&lt;0.005, p&lt;0.012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of test</td>
<td>Longitudinal with non-randomized control</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

INCREASED GRADUATION RATE IN SECONDARY SCHOOL STUDENTS
ESPECIALLY FOR LOW PERFORMING STUDENTS

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)

A group of low-performing urban secondary school students in the US who learned the Transcendental Meditation technique and practiced it during their senior year had a higher graduation rate than a control group of students matched for prior academic performance who did not learn the technique.

87.1% graduation rate for meditators, compared with 66.7% for non-meditators. For the low GPA students, 72.9% graduation rate for meditators compared to 47.9% for non-meditators (p = 0.012)
REDUCTION IN SUSPENSION IN UNDERSERVED CHICAGO HIGH SCHOOLS OF 79%

A study from the "Quiet Time" program run in underserved Chicago government high schools showed a 79% reduction in suspensions.

"Wolf pointed out that growing up in violent communities results in clear disadvantage for the children as the stress they experience lowers their cognitive capacities."

**REDUCED SUSPENSIONS**

This data shows that suspension rates dropped over time as the Quiet Time Program became more established at the school. In the first full year of the program, the suspension rate was 28%, more than twice the district average for middle schools. In the third full year of the program, the suspension rate was 4%, less than half the district average.
REDUCED TEACHER BURNOUT
THROUGH THE TRANSCENDENTAL MEDITATION TECHNIQUE

The probability of the results being random is between 0.01% and 2%
EMPIRICAL CASE STUDY
SUCCESS OF THE MAHARISHI UNIVERSITY – IOWA USA

Rankings of MUM MBA students came top in the USA, competing against 147 Universities business schools around the country in a business simulation competition.

Listed in Peterson’s 440 Great Colleges for Top Students.

Placed among Tier 2 Regional Universities (Midwest) by US News

Selected for the Top 100 Campus Challenge, a 3-day student conference held in Washington, DC. It was in the top 10% for: active and collaborative learning, supportive campus environment, enriching educational experiences and student-faculty interaction (National Survey of Student Engagement).
EVIDENCE FROM WORK IN SA: A CASE STUDY
TM TRAINING FOR 9 000 IN ALEXANDRA

From 1995 - 1999, 9 000 school learners trained in Transcendental Meditation in primary and high schools in Alexandra, Soweto, and Daveyton Townships.
INCREASED PASS-RATES BY A FACTOR OF 25% SUSTAINED OVER 3-YEARS: ALEX TOWNSHIP

RESULTS:

Increased pass rates for 9,000 students by a factor of 25% across the board on over 100,000 school marks (results taken from Department of Education reports).

A control group of 12,000 students in Alex was simultaneously tracked, results dropped 1%.
ACADEMIC RESULTS AT SKEEN PRIMARY IN ALEXANDRA PASS RATES (SCHOOL)
INCREASED FROM 64% TO 95%

A 30% improvement in pass rates for the entire school within six months -
The blue bar shows the improvement after intervention

Improvement in Pass Rates For The Entire School - Sken Primary School
(Before and After the Introduction of the TM Programme)

Marks have improved very significantly since the programme was begun in June 1997. Full schedules of mark improvements are available in a separate report.
Improvement in Pass Rates For The Entire School – Kwa Bhekilanga High School in Alexandra:
27% Increase Within 5 Months

Marks have improved very significantly since the programme was begun in June 1997. Full schedules of mark improvements are available in a separate report.

Improvement in Pass Rates For The Entire School – Kwa Bhekilanga High School
(Before and After the Introduction of the TM Programme)

Marks have improved very significantly since the programme was begun in June 1997. Full schedules of mark improvements are available in a separate report.
**IMPROVEMENT IN EVERY SUBJECT**

27% INCREASE WITHIN 5 MONTHS

**Improved School Marks: Improvements in Every Subject**

A 27% improvement in pass rates for the entire school within five months -

The yellow bar shows the improvement after intervention

Note: The programme was introduced in Skeen In June 1997
KWA-BHEKILANGA HIGH COMPETITIVE RESULTS

Kwa-Bhekilanga won the only competition in which the school entered (the SADTU Old Mutual Cultural Day held in Alexandra) since the introduction of the TM programme.

<table>
<thead>
<tr>
<th>Competition</th>
<th>Position</th>
<th>Number of Schools Competing</th>
<th>Won Before (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Mutual SADTU Cultural Day - 12 events</td>
<td>1st</td>
<td>5 high schools</td>
<td>No</td>
</tr>
</tbody>
</table>

Previously the school had always come last in this competition.
ALL ROUND IMPROVEMENTS IN PERFORMANCE
(Before and After the Introduction of the TM Programme)

– IMPROVEMENTS IN ARTS AND CULTURAL ACTIVITIES

Schools practising the TM technique have been found to improve in all arts and cultural activities compared to other schools in their district and province. This includes art, dancing, music, poetry and mime.

**Skeen Primary Competitive Results in Art and Cultural Activities**

<table>
<thead>
<tr>
<th>Competition</th>
<th>Position</th>
<th>Number of Schools Competing</th>
<th>Won Before (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Dance Eistedd for</td>
<td>1st</td>
<td>Johannesburg region schools</td>
<td>No</td>
</tr>
<tr>
<td>Old Mutual SADTU Cultural Day Competition</td>
<td>1st</td>
<td>12 schools</td>
<td>Yes</td>
</tr>
<tr>
<td>Traditional Music- Cultural Day</td>
<td>1st</td>
<td>12 schools</td>
<td>Yes</td>
</tr>
<tr>
<td>TUATA Music Competition</td>
<td>2nd</td>
<td>All Alexandra and all Soweto schools</td>
<td>No</td>
</tr>
</tbody>
</table>

Marks have improved in every class in every subject; English, maths and science are shown as examples.

Improvement in Individual Subjects for the Entire School - Skeen Senior Primary
REDUCED ABSENTEEISM – 70% REDUCTION

STUDENT ABSENTEEISM AT KWA-BHEKILANGA HIGH SCHOOL

- Absenteeism is a key indicator of dropout
- Absenteeism reduced by 70% at Kwa-Bhekilanga, Alexandra, since TM was introduced in late July 1997. Not only were most students attending school, but also more students were attending school the whole day.
- With increased enjoyment of school and of academic activities, student absenteeism has been found to reduce in township schools where the technique is practised regularly.

Note: Monthly averages are shown, based on figures tracked daily.
In a programme implemented in the late 1990s, significant reductions in teacher absenteeism were discovered as an outcome practicing TM.

Teacher absenteeism fell by over 90% since the introduction of TM at Kwa-Bhekilanga Secondary School in July 1997. By October 1997 (10 months after the introduction of the programme) the school had 100% teacher attendance.
“TM helped me with thinking. Before I was having a problem with thinking but since I started meditation I am thinking well and I feel so relaxed and happy.”
Brenda Sheera, Student - Alexandra High School (Grade 10E)

“Before I started meditation, I was stressed out, very impatient and lacked self confidence. Today I am completely a new person. I am energetic, full of good memory and have self-confidence.”
Otto Lekgoathi, Teacher - Alexandra High
QUALITATIVE FEEDBACK FROM SOUTH AFRICAN TEACHERS

“My concentration has improved and my work is more pleasing to those people in authority. In other words I am more productive and faster in doing my work.”

Edwin Machuba, Teacher - Kwa-Bhekilanga High

“I wasn’t sure if there was a way - I didn’t know one - to make pupils more attentive and creative. Now through TM I find I can impart more knowledge to students and in a simpler way. Sometimes I become surprised with myself e.g.: the way I think even since I started the technique: I make decisions more easily and automatically. I can just see things unfolding themselves without any hard thinking. Every minute of my life is now meaningful as I know that there is no boredom or idling of the mind.”

Gordon Kutu, Teacher - Skeen Primary School

“Before I began with this technique I am now more confident, happier and I think I have acquired not only the art of coping with stress, but also have become wiser and more intelligent.”

Sizwe, Teacher - Skeen Primary School
“Because of meditation I am what I wanted to be. My life has changed, I am no longer short tempered. I have good relationships with others. Meditation is a very nice thing to do. When I meditate I feel more relaxed and comfortable. These days when I sleep, I sleep like a baby.”

Louisa Sekhu, Teacher - Skeen Primary School

“I always knew or had an inner feeling that I had a lot of ability, but until the introduction to the TM technique, I was not able to reach my full potential. In most situations I felt like a lost sheep because most of my working days were filled with mental blocks, nervousness, psychosomatic illness, negative emotions, depression and much more. I lacked a sense of purpose and direction. I have tried many avenues to free both my mind and body from these ailments, but it was as if I was chained to the upsets of my past.

The TM technique addressed the unwanted stops in my life and I am gradually reaching my fullest potential. I feel that life can be lived much easier now without all the efforts I have previously experienced.”

Abner Modiba, Headmaster - Skeen Primary School
QUALITATIVE EVIDENCE FROM SA TEACHERS

“I am more tolerant with my colleagues. In addition, my relationships have improved at home.”
Nomokohsana Leotlela, Teacher - Alexandra High

“My relationships improved, both at work and home.”
Gordon Kutu, Teacher - Skeen Primary School

“I have always perceived myself as a very impatient, moody and aggressive person. Sometimes I just feel jealous of people that I don’t even know. I am now receptive to the differences between me and other people. I am able now to understand peoples’ perspectives of doing things. I am more considerate of other peoples’ situations and problems.”
Mpho Mmolawa, Teacher - Kwa-Bhekilanga High

“I also relate better with the students that I come into contact with. My relationship with members of my family is great, it is so much better. I cannot describe it. I wish they could also be introduced to T.M.”
Joe Shibambu, Deputy Principal - Kwa-Bhekilanga High

“Relating to pupils has become very, very great. I am able to understand the situations in which they live in a more professional and considerate way. These situations might be affecting them a lot in school.
Mpho Mmolawa, Teacher - Kwa-Bhekilanga High

With the pupils TM has worked very effectively. Children are now communicating freely and they feel free to ask where they did not understand. For me as their teacher it has helped me a lot.”
Comfort Ramahuta, Teacher - Skeen Primary School
IMPACT OF THE MAHARISHI INVINCIBILITY INSTITUTE – SOUTH AFRICA

IMPACT

19 073*
- Graduates placed into Jobs
  *Through MI and its funding organisations

R1.425 billion
- The combined annual earnings of our graduates

R41.85 billion
- Estimated Total Career Earnings of Graduates

70% target
- MI beneficiaries are women

14
- Awards won internationally and locally

22 000
- South African Accreditations

34
- Unemployed youth have been educated

R10 million =
- Estimated earnings of a graduate over their working career

10,000%
- Estimated ROI per individual for every R1 invested

150,000
- Family members supported by Graduates

TARGET

100,000
- Leaders educated and trained for the future of Africa

= R1 Trillion
- Earned over their working careers

INVESTMENT

1. R200 =
   - Student fee per month

2. R33,750 =
   - the cost to MI, per student per annum

3. R1.8 million =
   - Total Retail Value of Education

LEARN & EARN

Students work while studying + earn a stipend, gain work experience + “pay it forward”.

CBE

- Consciousness-Based Education = developing the inner consciousness of every student through Transcendental Meditation and Yoga
Inside... there is a world as big as the one outside,

...it starts with an inner ocean of silence. A deep feeling of being at ease.

Unboundedness.