

MINDFULNESS BASED TINNITUS STRESS REDUCTION:**Tinnitus, Brain Functioning, & Mindfulness**

Jennifer J. Gans, PsyD
Clinical Psychologist
University of California, San Francisco (UCSF)
VA of Northern California

MindfulTinnitusRelief.com 

Disclosure

- Dr. Gans has no commercial or financial relationship with Resound. This AudiologyOnline course is presented in partnership with ReSound in good faith with the common desire to expand tinnitus knowledge in the audiology community. All content is the property of Dr. Jennifer Gans

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Goals for Today's Talk

- Tinnitus Reviewed
- What Is Happening Inside the Tinnitus Brain
- De-Mystifying Meditation & Mindfulness
- How Meditation & Mindfulness are tools to change the Tinnitus Brain
- MBTSR Research & Findings
- Development of MindfulTinnitusRelief.com
- A look inside MindfulTinnitusRelief.com
- How Audiologists can lead MBTSR courses in their own practice

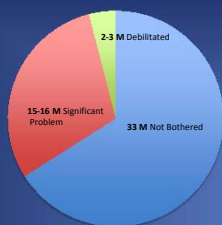
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Tinnitus Reviewed



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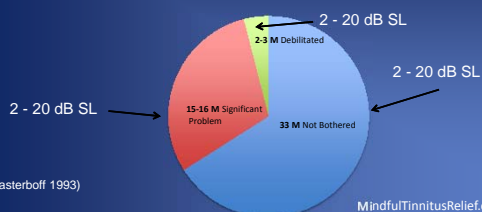
US Tinnitus Demographics



50 Million Americans experience tinnitus

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Perception of Tinnitus Bother: Psychoacoustic Properties of Tinnitus



(Jasterboff 1993)

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Facts About Tinnitus:

- Top 4 Complaints: Depression, Anxiety, Sleep Difficulty, Concentration Problems (Anderson et al 2005; Lockwood et al 2002)
- Stress increases tinnitus bother, relaxation decreases tinnitus bother.
- For most, tinnitus is a **benign (albeit very unpleasant) body sensation**.

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- **The Tinnitus Gordian Knot:** Is it tinnitus that is the problem or is it the emotions, memories, thoughts, feelings, beliefs, perspectives, stories etc about the tinnitus that are the problem?



Tinnitus: From Reaction to Response

Between every stimulus and response is a space. And within that space lies our freedom & choice.

-Victor Frankel

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De-Mystifying Mindfulness & Meditation



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Mindfulness Defined

"Mindfulness is **paying special attention**

- ✓ **on purpose**
- ✓ **in the present**
- ✓ **without (clinging to) judgments**

to the unfolding of experience, moment by moment."

~ Jon Kabat-Zinn

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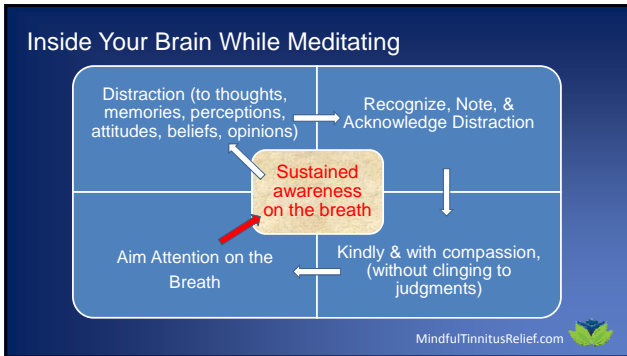
Mindfulness: Being With & Approaching our Experience



Requires a special kind of **awareness**

- Curiosity
- Openness
- Acceptance
- Compassion (Loving-Kindness)

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Tinnitus Boot Camp: Strengthening the "Awareness Muscle"

- We use the torque of repetition to build the "attention/awareness muscle" to modify our brain
- With repetition the associated neurons wire, fire, grow, & strengthen (neuroplasticity)



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How we hold tinnitus makes all the difference



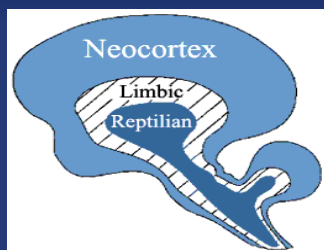
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What Might be Happening in the Tinnitus Brain



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The Brain in 3 Simple Parts



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Importance of the Medial Pre-Frontal Cortex

Executive Functions

- Emotional Regulation
- Response Flexibility – (think before you act)
- Fear Modulation
- Attention Regulation
- Sustaining Attention
- Impulse Control
- Reasoning
- Planning
- Metacognition (thinking about thinking)
- Empathy (self-other compassion)

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What We Know From Other Fields of Science



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Mindfulness: Not Just for Tinnitus Efficacy with a Range of Illnesses

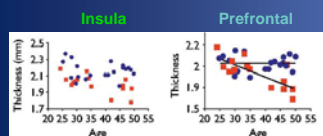
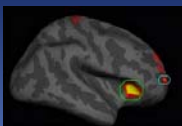
- **Chronic Pain** (Grossman et al., 2007)
- **Sleep & Dietary Problems** (Gross et al., 2011)
- **Anxiety** (Hofmann et al., 2010)
- **Depression** (Mason & Hargreaves, 2001)
- **Stress** (Shapiro et al., 2005)
- **PTSD** (Smith et al., 2011)
- **Fibromyalgia** (Grossman et al., 2007)
- **Chronic Fatigue** (Surawy et al., 2005)
- **Multiple Sclerosis** (Grossman et al., 2010)
- **Psoriasis** (Kabat-Zinn et al., 2003)

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Cortical Areas Thicker in Meditators

1. Brain areas (right insula & mPFC) are thicker in practitioners of Insight meditation than control subjects who do not meditate.
2. Graphs show age and cortical thickness of each individual.

(Lazar et al., 2005)



red = control subjects
blue = meditators

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Changes in Neural Structure & Function Associated with Meditation Practice

1. Decreased activation in the Amygdala (detection of affectively arousing stimuli) after just 8-weeks of mindfulness training (Goldin & Gross 2010)
2. Frontal-Limbic network – increased activation of PFC & decreased activation in amygdala (Beauregard et al 2001; Harenski & Hamann 2006; Schaefer et al., 2002)
3. Right Anterior Insula (awareness of body states) (Lazar et al., 2005; Holzel et al., 2008))
4. Increases in Left-sided anterior brain activation (positive emotion) after 8-week course (Davidson et al., 2003)

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Calisthenics for the Brain: "Awareness Building"

- With repetition, the associated neurons wire, fire, grow, & strengthen (neuroplasticity)
- With intentional effort we modify our brain using focused attention and concentration
- We use the torque of repetition to build the attention muscle



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MBTSR: From Anecdote to Empirical Data



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A Growing Body of Research Specifically Investigating Mindfulness & Tinnitus

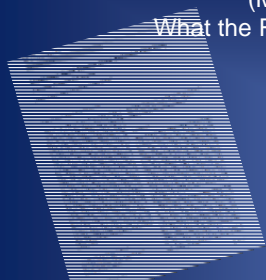
- Sadler, et al (2008)
- Philippot, et al (2012)
- Gans, et al (2013)
- Gans, et al (2015)
- Roland, et al (2015)



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Mindfulness Based Tinnitus Stress Reduction (MBTSR) What the Research Shows



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The Creation of Mindfulness Based Tinnitus Stress Reduction (MBTSR) Course



- Meant to be used in conjunction with excellent audiological care
- Participants are encouraged to continue using any tools or devices such as sound generators, hearing-aids, doctor-prescribed meds, acupuncture, other forms of meditations and relaxation, CBT, TRT, biofeedback, and the like...

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MBTSR Course Design



- 8 weeks in length
- 2 Hour Class per week
 - Tinnitus Education
 - Mindfulness Lesson
 - Instructor led meditations, gentle yoga, mindful movement
 - Discussion Questions
 - Skill Building Activities, calendars, and readings
- Home Practice: 30 minutes per day, 6 days/week
- A Day-Long Mindfulness Retreat between the 6th & 7th week

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Mindfulness Based Tinnitus Stress Reduction: Pilot Study & 12-Month Follow Up

(Gans, O'Sullivan, & Bircheff 2013)
(Gans, Cole, & Greenberg 2015)



- Subjects: 8 tinnitus patients who had previously received Tinnitus Counseling (standard of care) at the UCSF Audiology Clinic
- Pre- & Post assessments
- 30 minutes of Home Practice daily
- Post-Intervention Feedback Form (PIFF) administered at the end of the last class
- Tinnitus Handicap Inventory (THI) administered at 12-Month Follow-up (Gans, Cole, Greenberg 2015)

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MBTSR Measures

Primary outcome measure:

- Tinnitus Handicap Inventory (THI)

Secondary outcome measures:

- Tinnitus Visual Analogue Scale (VAS) (a measure of tinnitus annoyance)
- Tinnitus Percent Awareness Scale
- Hospital Anxiety and Depression Scale (HADS)
- SF-36 Symptom Checklist-90-Revised (SCL-90-R)
- Five Facet Mindfulness Questionnaire (FFMQ)

Qualitative measure

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MBTSR Findings



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Pre-, Post, and 12-Month Follow-Up

Intervention
Score
Differences
with Effect
Sizes

Measure	Pre-MBTSR Mean (SD)	Post-MBTSR Mean (SD)	12-Month FU Mean (SD)	Effect Size (Cohen's d)*
THI	50.63 (15.22)	39 (21.8)	23.6 (16.8)	.69
VAS	59 (24.87)	36.88 (24.26)		.99
Tinnitus Awareness	60 (33.7)	41.25 (32.49)		.64
FFMQ				
• Non-Judge	28 (5.09)	32.25 (6.94)		-1.29
• Observing	30.13 (5.64)	31.75 (3.92)		-.46
• Non-Reactivity	20.38 (4.51)	23 (9.44)		-.52
• Describe	29.75 (5.76)	32.38 (5.53)		-.57
• Acting with Awareness	28 (6.57)	27.75 (4.4)		-.05
SF-36				
• Social Functioning	38.5 (10.35)	49 (46.3)		-.70
• Mental Health	44.78 (11.21)	49.33 (9.32)		-.62
• Vitality	50.83 (9.1)	53.78 (6.94)		-.46
HADS	15.5 (6.46)	13.38 (7.23)		.30
SCL-90-R				
• Depression	66.5 (12.3)	56.38 (24.44)		.62
• Phobic Anxiety	65.38 (13.31)	50.39 (21.77)		.58
• Somatization	60.13 (14.75)	49.89 (23.5)		.41
• Anxiety	63.38 (12.57)	54.88 (23.95)		

* Effect Size (ES)
rather than levels
of significance
were reported due
to a small sample
size.

Tinnitus Handicap Inventory (THI)

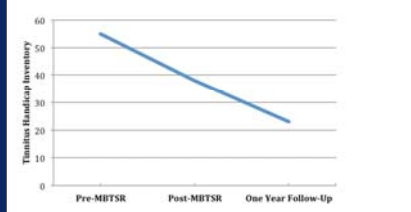
Table 2
12-Month Follow-Up Tinnitus Handicap Inventory (THI) scores observed across all subjects (n=7)

Participant	Pre-Tinnitus Handicap Inventory	Post-Tinnitus Handicap Inventory	12-month FU
1	52	20	10
2	72	64	50
3	66	44	24
4	40	32	22
5	78	55	26
6	24	20	8
7	54	34	20

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Tinnitus Handicap Inventory (THI)

Figure 1.



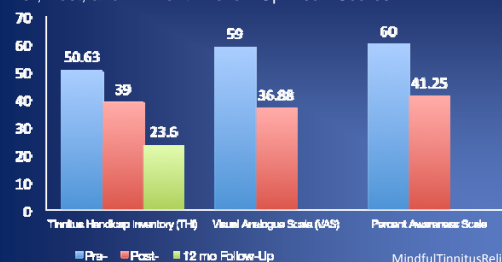
n=7

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Tinnitus Symptom Severity & Awareness

Pre-, Post, and 12-Month Follow-Up Mean Scores



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Summary of Findings (Gans et al., 2013)

- Decreased Tinnitus Handicap & Bother
- Decreased Depression
- Decreased Anxiety
- Increased Mindfulness
- Increased Quality of Life

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Qualitative Measures:

What participants are saying



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Qualitative Findings

Overall Perception Shift:

- *"Tinnitus doesn't seem like a terrible curse anymore. It's sometimes annoying now but not insurmountable."*
- *"I have come to see it (tinnitus) now as just another sensation, typically unpleasant, rarely neutral, never pleasant but I try to be aware without judging."*

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What Participants Are Saying: Qualitative Findings

Changes in Sleep:

- *"I am sleeping in a more regular pattern now. When I take medication to sleep, I'm taking half instead of the full dose."*

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What Participants Are Saying: Qualitative Findings

Changes in Symptoms of Depression:

- *"I can go into the ringing without going towards depression."*

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What Participants Are Saying: Qualitative Findings

Improved General Functioning:

- *"I am adapting the mindfulness process into my daily life. It has greatly helped me, not only to cope with the tinnitus but also with my relationships, communication, patience and anger-management. Yes, it has been a big commitment time-wise, but so worth it."*

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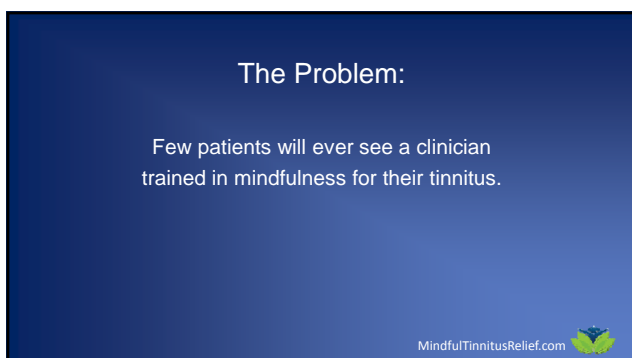
What Participants Are Saying

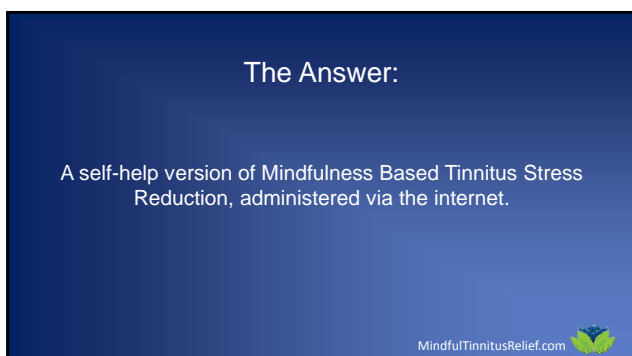
Recent Quote from a Participant of the MindfulTinnitusRelief.com course:

- *"It's funny. After just a few weeks of starting the course, I am noticing that my tinnitus doesn't bother me as much anymore. And I'm getting along better with my husband."*

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The Rise of Internet-Based Treatments

- Over 100 studies on Internet Interventions
- As effective as face-to-face intervention
- Cost-effective
- Consumes less therapist/physician/audiologist/ENT time
- Easy access to evidenced-based treatment
- Conducive to Large Randomized Controlled Studies
- Computer administered questionnaires allows for monitoring progress, safety and outcomes
- Puts healing into the hands of the patient

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Efficacy of Internet-Delivered Treatment for Various Conditions

- Tinnitus - Hesser (2012); Kaldo (2008)
- Pathological Gambling – Carlbring & Smit (2008)
- Social Phobia - Andersson (2006); (2012)
- Spider Phobia – Andersson et al (2009)
- Depression & Anxiety – Cuijpers (2010); Wagner et al (2014); Hedman et al (2013)
- Panic Disorder - Bergstrom et al (2010); Calbring et al (2005)
- Agoraphobia – Kiroopoulos et al (2008)
- Prostate Cancer – Schover et al (2012)
- Generalized Anxiety Disorder – Andersson et al (2012)

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The first-ever self-administered online skill-building course of its kind for learning how to live comfortably with tinnitus

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MindfulTinnitusRelief.com: 8-Week Online Course

- MBTSR World-Wide with Online Access
- Desktop, laptop, Tablet, smartphone accessible
- Reaches those with limited access to tinnitus care
- Weekly classes at participant's convenience
- Patients can self-refer
- Privacy
- Low Cost
- Automated reminders can be sent to encourage treatment compliance
- Puts Tinnitus Healing back into the hands of the patient



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MindfulTinnitusRelief.com: What Is Included

- Eight 2-Hour Weekly Online Instructional Classes
- Daily (30-minute) Home-Practice Mindfulness Skill Building Exercises
- A 7-Hour All-Day Online Mindfulness Retreat
- Advanced and Up-to-Date Tinnitus Information and Education
- Mindful Movement and Yoga Video Instruction
- More than two hours of downloadable mindfulness "awareness building" (meditation) exercises
- Weekly Discussion Questions to stimulate class forum communication & community
- Downloadable activities, calendars, and readings with links to additional resources about tinnitus and mindfulness
- Online Discussion Board Forum to connect and share experiences with other participants

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MindfulTinnitusRelief.com: Activities

Mindfulness Education & Practice

Audio Links

Yoga Videos

Tinnitus Education

Weekly Discussion Questions

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The MBTSR Education Partnership Program (EPP)

- How the Practitioner can get involved



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The MBTSR Education Partnership Program (EPP)

- Online Handbook for Practitioners
- Instruction on How to Run MBTSR Courses in Your Clinic
- In-Person Local Group Sessions
- Augment, Complement, Per Experience
- Building Tinnitus Communi

Go to:
MBTSR.com




Pain in life is inevitable;
Suffering is optional

~Buddha



How we hold tinnitus makes all the difference



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Thank You
Questions?



Simply log on to MindfulTinnitusRelief.com
jg@MindfulTinnitusRelief.com

Hearing Review Article

*Mindfulness Based Tinnitus Stress Reduction:
Unraveling the Gordian Knot of Tinnitus*

<http://www.hearingreview.com/2015/06/mindfulness-based-tinnitus-stress-reduction-unraveling-gordian-knot-tinnitus/>

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