

Psychological Treatment for Tinnitus with Cognitive Therapy and Neurofeedback

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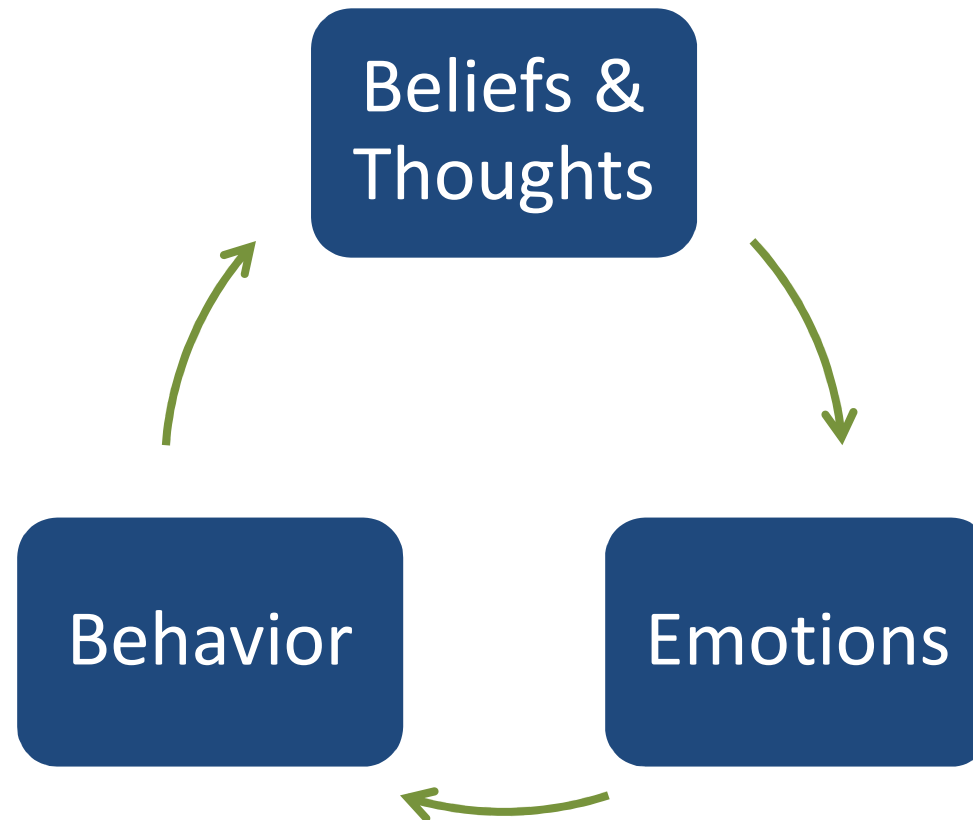
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Cognitive behavioral therapy

- Tinnitus-Counselling, Psychoeducation
- Cognitive Restructuring
- Habituation
- Activation (pleasant activities) and Distraction
- Acceptance
- Relaxation (Jacobson, Breathing-relaxation, Biofeedback, etc.)
- Stress-Management

Cognitive behavioral therapy



The A-B-C model of Cognitive Therapy

Activating event	Beliefs	Consequences
- Actual event - Patient's immediate interpretations of event	- Evaluations - Rational - Irrational	- Emotions - Behaviors - Other thoughts
Example:		
Tinnitus	„It never ends“ „It is getting worse“	Frustration Depression Anxiety Avoidance of activities

Catch it – check it – change it!

Cognitive Restructuring	Positive changes
„I can do something to make it better“ „I can do relaxation“ „I had already times, when the tinnitus was much more quiet“ „When I go for a walk, it will be better“ „I can do everything I want to, despite tinnitus.“	- Feels more confident - Self-efficacy - Less depressed - Less anxious - More active (hobbys, social activities) - Less focussing on tinnitus - Habituation

Worksheet

Changing Thoughts and Feelings Worksheet

1. From the Tinnitus Problem Checklist, write down one bothersome tinnitus situation _____

2. Check one or more of the three skills to manage the situation

☐ **Relaxation exercises**

breathe
Relax
imagine

☐ **Plan pleasant activities**

golf, write, walk
Pleasant activities
dance, paint

☐ **Changing thoughts**

Think

Feel

3. Write down the details for each skill you will use

☐ *Deep breathing*

☐ *Imagery*

☐ *Other* _____

Activity 1 _____

Activity 2 _____

Activity 3 _____

Old thought _____

New thought _____

4. Use your plan over the next week. How helpful was each exercise?

Not at all	A little	Moderately	Very much	Extremely
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

Not at all	A little	Moderately	Very much	Extremely
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

Not at all	A little	Moderately	Very much	Extremely
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

5. Comments

When you find something that works well (or not so well) please comment. You do not need to wait 1 week to write your comments.

Cognitive Restructuring materials

headroom
Wellbeing Guide

Page 1/3

Catch It, Check It, Change It

This is a simplified version of Cognitive Behavioural Therapy (CBT).

CBT is based on the idea that the way you see yourself, the world and other people can affect your thoughts and feelings, and can ultimately lead to mental health problems.

But through practice, you can learn to change the way you think, which can really help in recovering from psychological problems and improving your mental wellbeing.

What we're offering here is only a very simple version, but it still might be useful to understand your own thoughts.

Thoughts: *They ignored me – they don't like me*

Emotions: *Low, sad and rejected*

Actions: *Go home and avoid people*

This can become a vicious circle; the more negative your thoughts, the more depressed you might become, and the more depressed you are, the easier it is to believe quite unrealistic and depressing things.

Helpful/glass half full response
Someone who isn't depressed might have a more positive view of the situation:

Thoughts: *They look a bit distracted – I wonder if there's something wrong?*

Step 2 – Check It
Stop and think about what you're thinking. Is it really true? Do you have evidence to back it up? Would other people interpret things in the same way? This is perhaps the most difficult part of the exercise as nearly everybody believes their own thoughts are right (think about arguments with friends about politics or football). It's very difficult to check out your own thoughts objectively. That's why CBT is best done with a therapist, who is much more able to take that 'one step back' perspective.

Step 3 – Change It
At this point you need to try substituting more realistic thoughts. If your automatic thoughts tend to be depressive or anxious, you need to think of different – but realistic – ways of thinking about



Efficacy of CBT for tinnitus

Meta-analysis	evidence	recommendation
Andersson & Lyttkens, 1999. CBT	high	strong, evidence Ia
Martinez-Devesa et al, 2010, CBT	high	strong, evidence Ia
Cima et al., 2014, CBT	high	strong, evidence Ia
Kröner-Herwig et la., 1995, 2003; Zachriat & Kröner-Herwig, 2004, CBT group	high	strong, evidence Ia
Zenner et al., 2013, CBT individual	high	strong, evidence Ia

Recommendation for CBT, S3-Guideline, AWMF online 2015

Efficacy of CBT for tinnitus

- Schaaf, Gieler, Hesse (2017). Evaluation einer stationären neurootologisch-psychosomatischen Tinnitus-therapie. Psychotherapeut 9-2017.
 - Effect size Mini-TF12 prae-post: 2.85
 - Effect size Depression: 2.2
 - Effect size Anxiety: 1.8

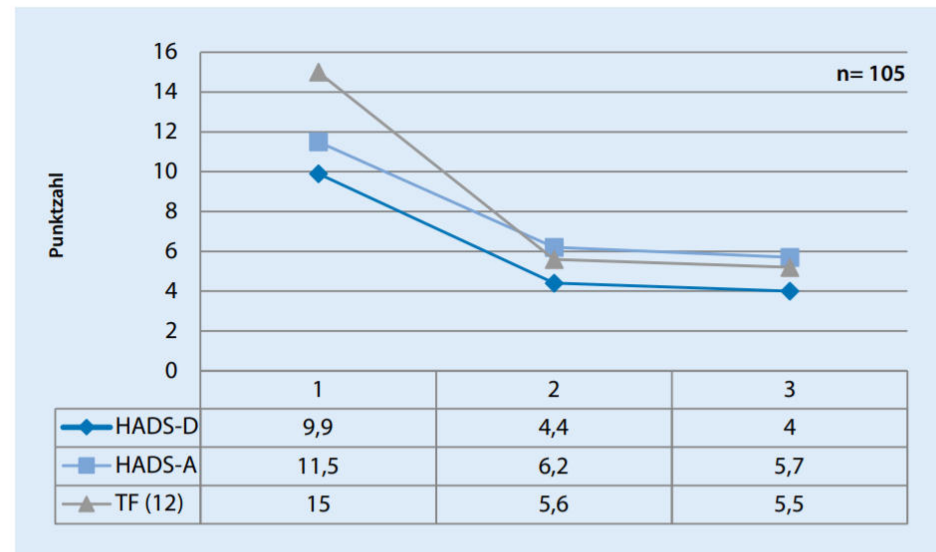


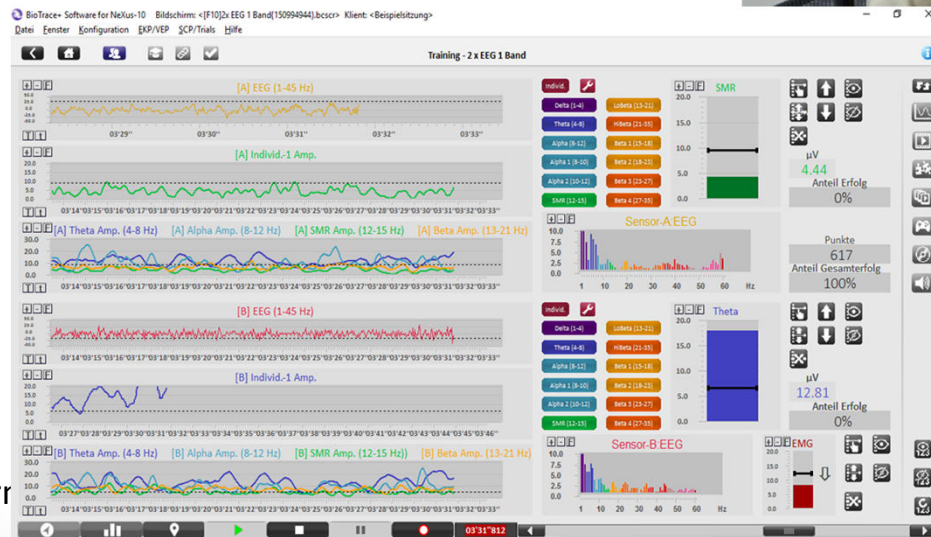
Abb. 2 ▲ Verlauf der Durchschnittswerte des Mini-Tinnitus-Fragebogen 12 (*grau*) sowie des Hospital Anxiety and Depression Score – deutsche Version: Angstanteil HADS A (*hellblau*) und Depressionsanteil HADS D (*blau*) zu Therapiebeginn (1), Therapieende (2) und zum Zeitpunkt des Follow-up (3)

Neurofeedback

Self-control of brainwaves

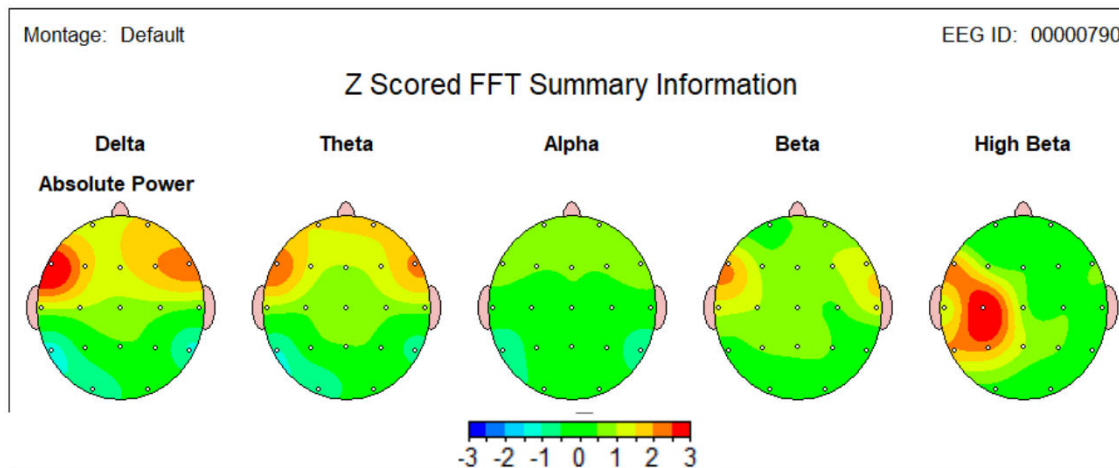


Norr



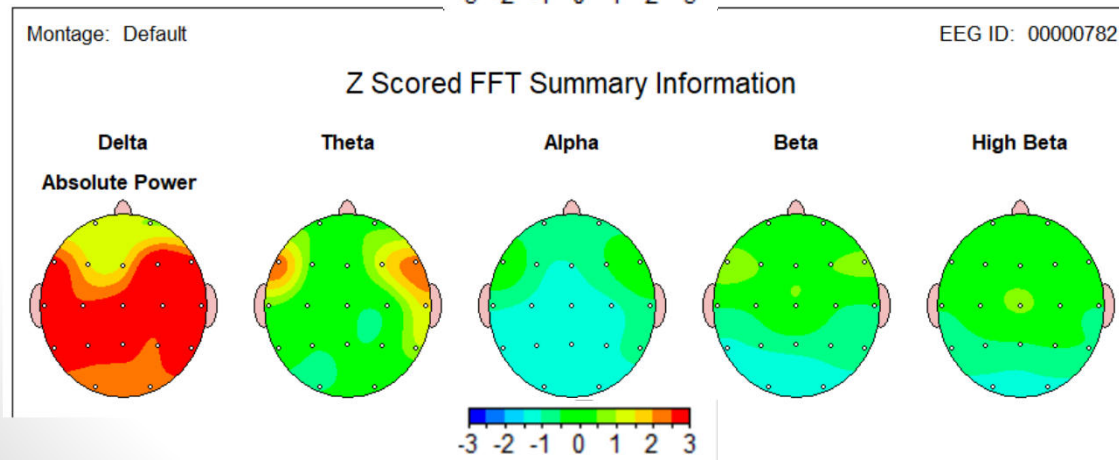
QEEG-Assessment

quantitative EEG to check abnormal
brainwave activity with tinnitus-patients



Male, 53a, Tinnitus
since 5 years,
TF 17%, cognitive
impairment 27%
Tinn.loudness VAS 8

HiBeta abnormality

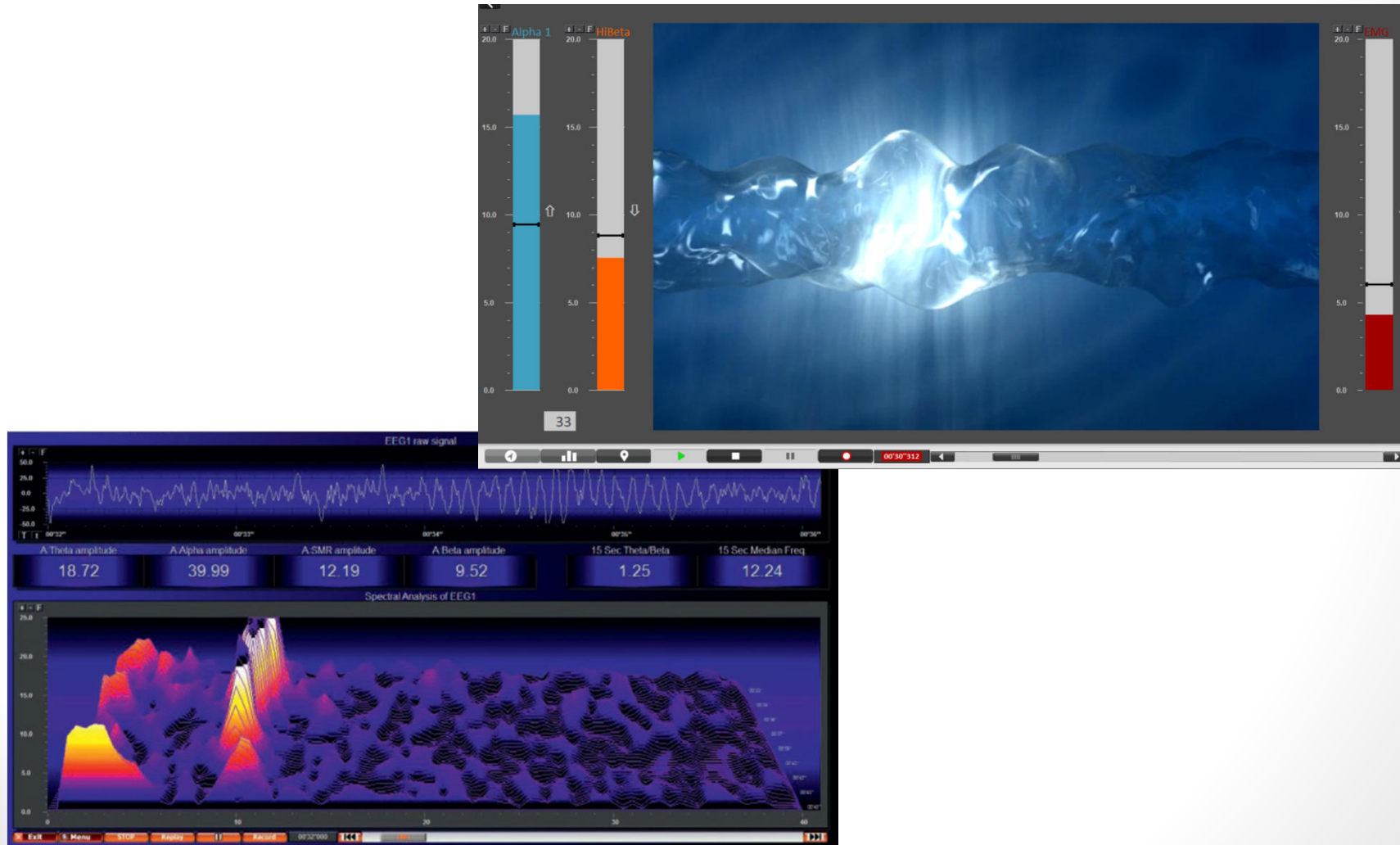


Male, 39a, Tinnitus since
1 year,
TF 67%, emotional
impairment 83%
Tinn.loudness VAS 6

Delta, Alpha abnormality

Alpha, HiBeta Neurofeedback

to promote habituation and cognitive restructuring



Alpha (tau) and delta neurofeedback to reduce tinnitus loudness

- Dormann, Weisz et al., 2007. Neurofeedback for treating tinnitus. In: Progress in brain research 166, 473-485.
- Abnormal oscillatory brain (reduced alpha, raised delta)
- Involved network areas
 - Temporal areas / Sylvanian fissure (processing of perceptual features of tinnitus)
 - Frontal areas (cognitive processing)
 - Limbic areas (emotional processing)

Correlation of tinnitus-distress and alpha, delta frequency

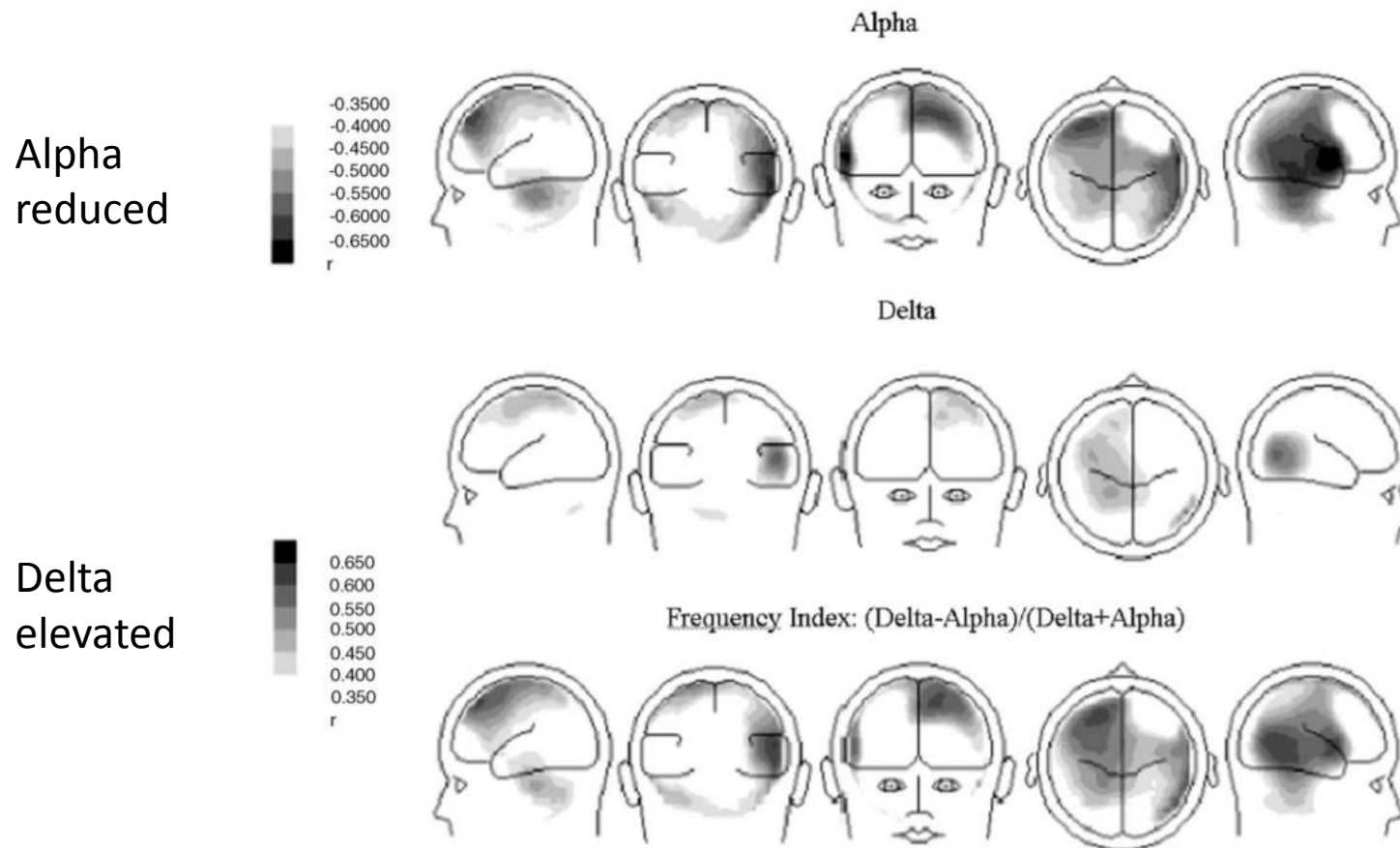
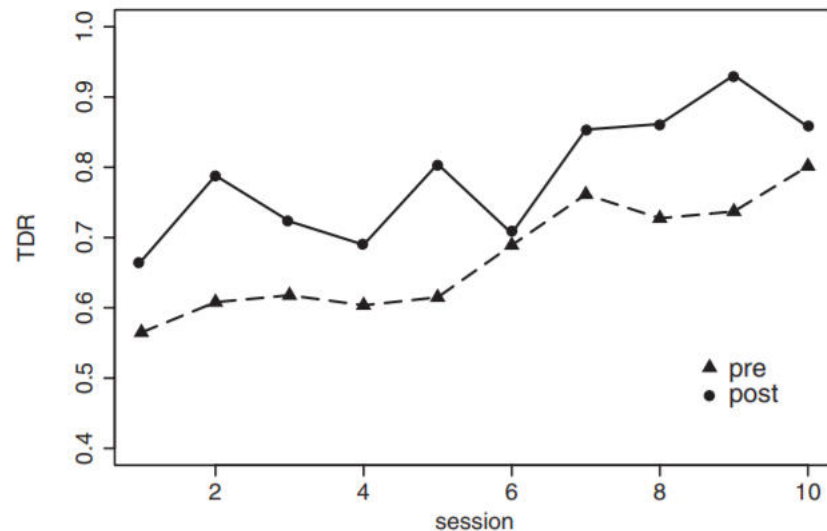


Fig. 1. Distribution of correlation coefficients between the tinnitus-related distress (score on the Tinnitus Questionnaire) and the power in alpha, delta, and a frequency index of both bands, respectively. Effects are largest for right temporal and left frontal sources. (Adapted with permission from Weisz et al., 2005.)

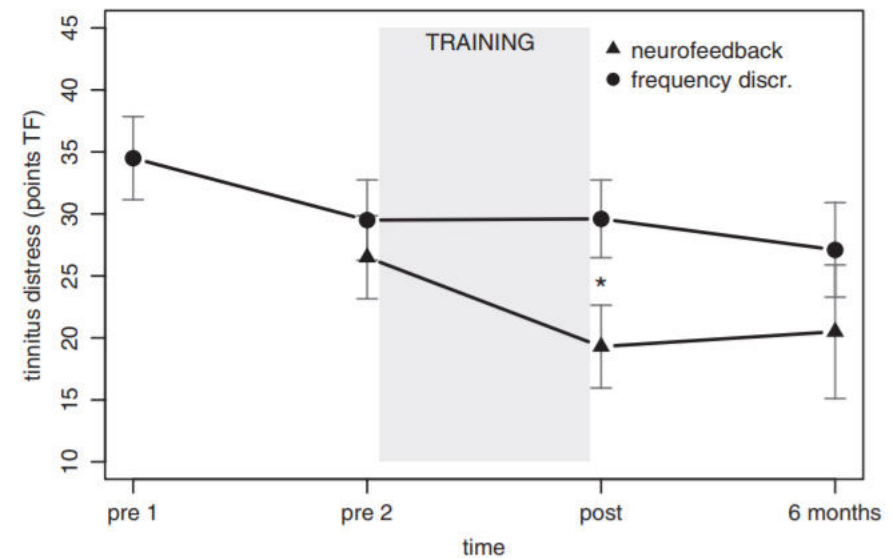
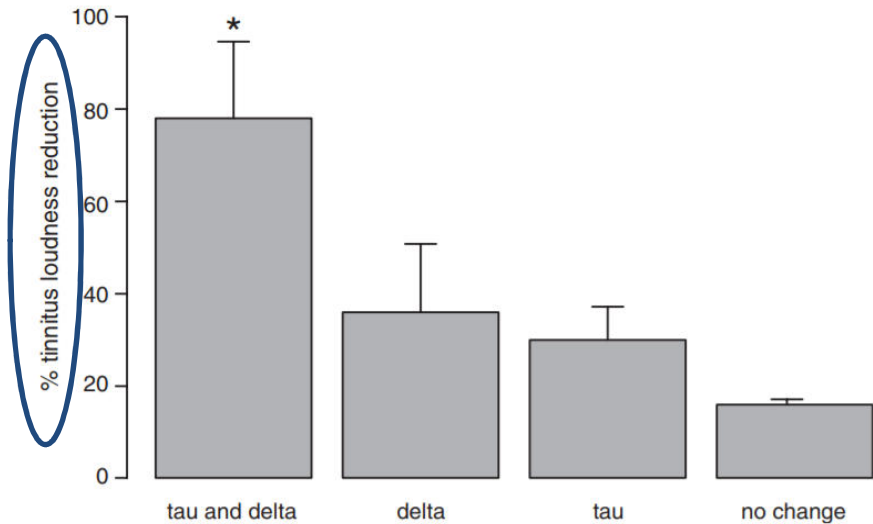
Efficacy of TDR Neurofeedback



Tau-Delta-Ratio neurofeedback
10 training sessions

Right Side:
Comparison of neurofeedback with
frequency discrimination training

Norman Schmid



Significant correlation of neurofeedback-success and reduction of tinnitus-loudness

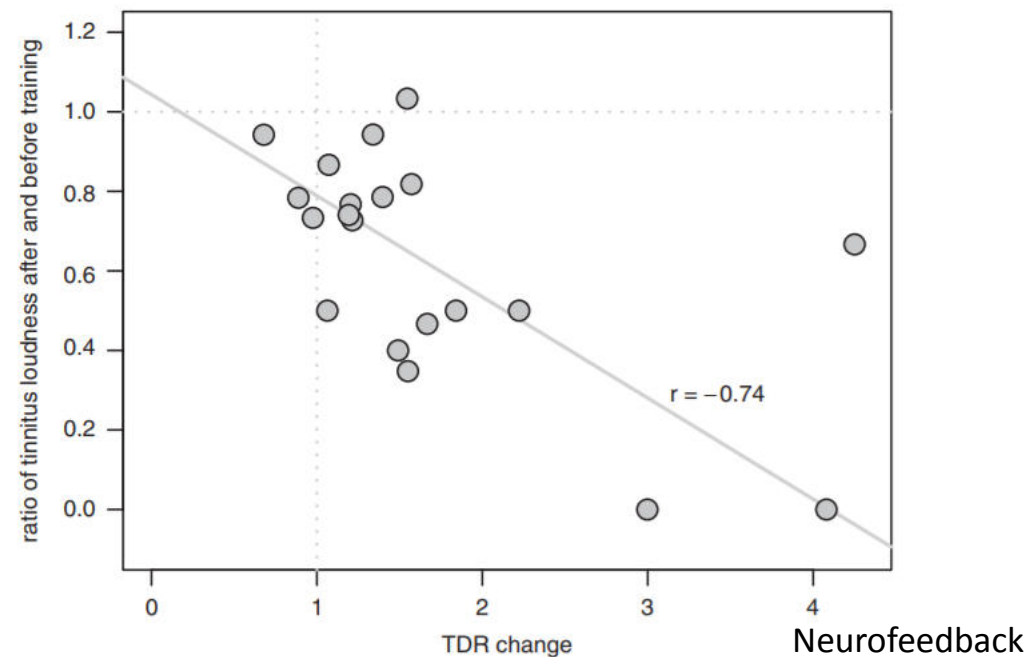


Fig. 5. Correlation between the change in tau/delta power (x-axis; displayed as the tau/delta ratio after the training divided by the tau/delta ratio before the training) and the change in tinnitus intensity (y-axis; ratio between the intensity after the therapy and the intensity before the therapy). Values in tau/delta change above 1 (dashed line) indicate a high normalization (= enhancement of tau and/or reduction of delta), whereas slight values in tinnitus intensity reduction (under the dashed line) indicate large reduction. Two patients with large normalization show a tinnitus change of zero, indicating no tinnitus at post-training. The added line is the regression line with the regressor of tinnitus intensity reduction and the predictor of tau/delta change. These analyses are independent from the different feedback protocols.

Thank you for your attention



"The ringing in your ears—I think I can help."

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