| Table E4. Psychological/behavioral intervention and outcomes (n=19) | | | | |
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| **Author**  **Year**  **Setting** | **Population Description** | **Intervention** | **Outcome Measures** | **Results** |
| Abbott,71  2009  Australia | Baseline Sample: Total n = 56;  Interven n = 32; Cntrl n = 24  Setting: Internet in 23 industrial settings, Mean Age (SD):  Interven: 50.5 y (9.5);  Cntrl: 48.7 y (8.6)  Gender:  Interven: 96% male  Cntrl: 83% male  Presumed etiology of tinnitus: idiopathic Duration of tinnitus: > 3 months  Severity of tinnitus: NR Number of dropouts:  Interven N=4; Cntrl=1  Reasons for dropouts: most indicated withdrawal by no response when contacted  Audiological factors: NR Comorbidities: NR | Internet-based education  Interven: 10 components, presented in six modules, and completed at the rate of one module per week. Modules included homework assignments and weekly diaries submitted electronically. Participants completed daily online registrations 1 week before Interven (pre-assessment) and 1 week immediately after Interven (post-assessment) on VAS (range 0 to 10)  Comparator: Information only  Duration of treatment: 6 weeks  Number of follow ups: 1  Duration of study: June 2006 to March 2007 | Depression (DASS-D)  Anxiety (DASS-A)  Loudness (VAS)  Sleep  (VAS)  G-QOL (WHO-Social)  TS-QOL  (TRQ\*, VAS, OSI-R) | The CBT program was not found to be superior to the information program for treating tinnitus distress.  Participants who completed the program generally reported finding most aspects of it useful, but found the sound enrichment, sound sensitivity, and cognitive restructuring tools less useful.  Adverse Events: None |
| Andersson,75  2005  Sweden | Baseline sample Total n = 23;  Interven n = 12; Cntrl n = 11  Setting: web pages and newspaper articles  Mean age (SD): 70.1y (3.90)  Gender: 52% male  Presumed etiology of tinnitus: NR  Duration of tinnitus: Mean 13y (12.5)  Severity of tinnitus: “problem with tinnitus” as inclusion criteria  Number of dropouts: None  Reasons for dropouts: N/A  Audiological factors: 22% previously fitted with hearing aids  Comorbidities: NR | CBT  Interven: Sessions covered information about tinnitus, applied relaxation, cognitive restructuring, behavioral activation, positive imagery, sound enrichment, exposure to tinnitus, advice regarding hyperacusis, hearing tactics, and relapse prevention.  Comparator: Wait list  Duration of treatment: 6 weeks of 2 hour sessions  Number of follow-ups: 2 (immediately post-treatment and 3 months post-treatment taken after crossover)  Duration of study: 19 weeks | TS-QOL  (TRQ)  Depression (HADS-D)  Anxiety (HADS-A\*, ASI) | TS-QOL Results showed statistically significant reductions of tinnitus-related distress. *F*(1,21)=6.4, p=0.02  CBT was better than no treatment, but the particular aspects of CBT that contributed to the effects can not be established.  The findings give some support for the use of group CBT for elderly people with tinnitus.  Adverse Events: NR |

| **Table E4. Psychological/behavioral intervention and outcomes (n=19) (continued)** | | | | |
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| **Author**  **Year**  **Setting** | **Population Description** | **Intervention** | **Outcome Measures** | **Results** |
| Andersson,74  2002  Sweden | Baseline sample Total n = 117;  Interven n = 53; Cntrl n = 64  Setting: web pages and newspaper articles  Mean age (SD):  Interven: 48.5y (12.3); Cntrl: 47.2y (15)  Gender:  Interven: 54% male; Cntrl: 52% male  Presumed etiology of tinnitus: NR  Severity of tinnitus: “severe problem” for which patient has seen GP or ENT  Number of dropouts:  Interven n = 29; Cntrl n = 16  Reasons for dropouts:  Interven: 26 did not finish treatment; 4 incomplete questionnaire;  Cntrl: 16 incomplete questionnaire  Audiological factors: problems in 68% Comorbidities: sleep problems, anxiety, depression | CBT  Interven: Self-help manual constructed following cognitive behavioral principles, consisting of 6 modules (1 module performed per week). Daily diary ratings were included for 1 week before and 1 week following the treatment period.  Comparator: Wait list  Duration of treatment: 6 weeks  Number of follow-ups:1  Duration of study: 1 yr | TS-QOL  (TRQ\*, VAS-Ann, VAS-Ctrl)  Anxiety (HADS-A\*, ASI)  Depression (HADS-D)  Sleep  (VAS)  Loudness  (VAS) | TS-QOL: group effect on pre- vs. post-treatment change score: *t*(70)=3.99, p=0.002  ITT analysis: NS  No significant differences between the groups were found at either post-treatment (p = 0.29) or at the 1-year follow-up (p= 0 .16).  CBT via the Internet can help individuals decrease annoyance associated with tinnitus.  Adverse Events: NR |
| Biesinger,78 2010  Germany | Baseline sample Total: n = 40  Interven: n = 20; Cntrl: n = 20  Mean age(SD):  Interven: 44.7y (10.9);  Cntrl: 39.9y (11.3) Gender: 47.1% male  Presumed etiology of tinnitus:  Nonsomaterenic tinnitus Duration of tinnitus: >3 months  Severity of tinnitus: Main complaint  Number of dropouts:  Interven: 5; Cntrl: 1  Reasons for dropouts: Missed sessions- job-related, personal, organizational reasons, incomplete data  Audiological factors: Normal audiogram (LE 10dB or any frequency) as inclusion criteria  Comorbidities: NR | Qigong Therapy is a set of breathing and movement exercises with possible benefits to health through stress reduction and body activity. Qigong contains important principles  of modern tinnitus therapy, such as relaxation, reduction of muscle tension, attention distraction, stress reduction, activation, and communication, especially when exercising in groups.  Qigong training program for 5 weeks, 2 hrs twice a week under professional Qigong instructor.  Comparator: Wait list    Duration of treatment: 10 sessions, 5 weeks  Number of follow ups: 3  Duration of study: NR | TS-QOL  (TBF-12\*, VAS) | Qigong was completed by 80% of the assigned patients.  Compared with the Cntrl group, Qigong participants experienced improvement in tinnitus severity, as reflected by a significant reduction in both the VAS and the TBF-12 (group x time interaction: *F*(3,66)=3.7, p=0.015)  In the subgroup of patients with somatosensoric tinnitus, Qigong effects were more pronounced, resulting in a highly significant improvement in both scales compared to the waiting-list group.  Adverse events: No Qigong related reasons affected participation in the study. No relevant side effects were reported. |
| Cima,54  2012  Netherlands | Baseline sample Total: n = 492  Interven n = 245; Cntrl n = 247  Setting: Tinnitus Centre  Mean age (SD):  Int: 53.74y (11.05); Cntrl: 54.63y (12.02)  Gender:  Int: 65% male; Cntrl: 61% male  Presumed etiology of tinnitus: Idiopathic Duration of tinnitus: >1 year 70% Severity of tinnitus: primary complaint, 84% with continuous tinnitus  Number of dropouts:  Interven n=74 (30%); Cntrl n=86 (35%)  Reasons for dropouts: NR Audiological factors: 19% with hearing aid; 19% with sound generator Comorbidities: NR | Specialized care of CBT with sound-focused tinnitus retraining therapy.  Comparator: Usual Care  Duration of treatment: 8 months  Number of follow ups: 2  Duration of study: September 2007 and January 2011 | G-QOL  (HUI)  TS-QOL  (TQ\*, THI)  Depression (HADS) | Patients assigned to specialized care improved in health-related QOL during a period of 12 months (between-group difference 0.059, 95% CI 0.025 to 0.094; p=0.0009);  Decreased tinnitus severity (between group difference –8.062, 95% CI –10.829 to –5.295;  p<0.0001) and tinnitus impairment (between group difference –7.506, 95% CI –10.661 to –4.352; p<0.0001).  Specialized treatment of tinnitus based on CBT could be suitable for widespread implementation for patients with tinnitus of varying severity.  Adverse Events: Adverse results as a result of treatment or measurements did not occur |
| Henry,87 1998  Australia | Baseline sample Total n = 54  Int Grp1: n = 12; Int Grp2: n = 14  Int Grp3: n = 12; Cntrl: n = 14  Setting: response to radio or newspaper announcements  Mean age: 56.3 y (range 35 to 83)  Gender: 62% male  Presumed etiology of tinnitus: idiopathic Duration of tinnitus: >6 months Severity of tinnitus: primary complaint  Number of dropouts: 4  Reason for dropouts: NR Audiological factors: score 17+ on the TRQ Comorbidities: treatment resistant, 72% had subjective hearing loss | CBT  ACI - Attention Cntrl and Imagery Training: cognitive coping strategies to help subject learn to shift attention to and from tinnitus and focus on pleasant stimuli – all subjects provided with a written educational manual  CR – Cognitive Restructuring –- all subjects provided with a written educational manual based on case examples and educational materials  ACI+CR – Combined Treatment – condensed version of 2 treatments – subjects provided with treatment and education manuals  3 treatment programs consisted of 8 weekly group sessions lasting 90 minutes  Comparator: Wait list Cntrl – treatment provided after 8 weeks  Duration of treatment: 8 weeks  Number of follow-ups: post-treatment, 6 m  Duration of study: NR | Depression (BDI)  TS-QOL  (TRQ\*, THQ handicap, TCSQ coping, TEQ) | The analyses revealed that the combined treatment condition (ACI +CR) showed significantly greater improvement on ameasure of psychological distress and achieved a higher clinical response rate compared to the two single treatments.  Subjects in the CR condition improved significantly more than the ACI condition on the TRQ (F( 1,46) = 4.47, *p* <*0.05)*  Subjects in the combined ACI + CR condition improved significantly more than those subjects in the ACI condition and CR condition on the TRQ (F( 1,46) = 4.38, *p* < 0.05).  There were no significant group by time effects for any of the dependent variables at the six-month follow-up.  Results were interpreted as supporting the practice of combining the two cognitive approaches.  Adverse Events: NR |
| Henry,86 1996  Australia | Baseline sample: Total n = 60,  Int Grp1: n = 20, Int Grp2: n = 20,  Cntrl: n = 20  Setting: Hospital  Mean age: 64.6 y  Gender: 86.6% male  Presumed etiology of tinnitus: idiopathic Duration of tinnitus: >6 months Severity of tinnitus: score ≥17 points on the TRQ; unsuccessful previous treatments  Number of dropouts: 0  Reasons for dropouts: NA Audiological factors: no hearing aid, masker or tinnitus suppressive medication previous 6 months Comorbidities: NR | CBT  ACI - Attention Cntrl and Imagery Training & CBT vs wait list  Treatment groups involved 1 90- minute session per week for six weeks. Treatment conducted in groups of 5 to 7 participants. All psychological treatment was delivered by a clinical psychologist.  Int Grp1: Cognitive coping skills training plus education;  Int Grp2: Education,  Comparator: Wait List Cntrl  Duration of treatment: 6 weeks  Number of follow ups: 2  Duration of study: 12 months | Depression (BDI)  TS-QOL (TRQ\*, TEQ, THQ-handicap, TCSQ coping, TCQ awareness)  Loudness (Self reported) | TS-QOL: significant reduction in tinnitus distress which was significantly greater when the cognitive coping training was combined with education than when education alone was provided *(F(1,57*)=16.19, p <0.01)  Subjects who received the combined cognitive/education intervention demonstrated significantly greater reductions in distress and handicaps associated with tinnitus and engagement in dysfunctional cognitions, than the subjects who received education alone. No significant effects were obtained on measures of depression or loudness.  Adverse Events: NR |
| Henry,88 2007  United States | Baseline sample Total n = 268  Int Grp1 n = 94, Int Grp2 n = 84,  Cntrl n = 90  Setting: Hospital  Mean age(SD):  IntGrp1: 62.1y (8.9); IntGrp2: 60.8y (9.5);  Cntrl: 62.0y (11.3)  Gender:  IntGrp1: 96.8% male; IntGrp2: 96.4% male  Cntrl: 96.7% male  Presumed etiology: NR  Duration of tinnitus: 87.7% GE 3 y  Severity of tinnitus: Sufficiently bothersome to warrant Interven  Number of dropouts: IntGrp1 n = 26, IntGrp2 n = 23, Cntrl n = 15  Reasons for dropouts: NR  Audiological factors: 93% difficulty hearing at least ‘sometimes’  Comorbidities: NR | Group Education Counseling (TRT principles)  Interven group attended four 1.5 hour group sessions each week conducted by audiologists. Assessed at baseline, and at 1, 6, and 12 months after their last group session. Comparison group (traditional-support) subjects attended four weekly 1.5-hour discussion-type group sessions. Sessions were moderated by the project coordinator. No education was provided in the support group.  Comparator: no treatment and traditional support  Duration of treatment: 4 weeks  Number of follow ups: 3  Duration of study: 12 months | TS-QOL (TSI) | The educational counseling group showed a significant reduction in mean TSI score from baseline to 6 months (*p* < 0.001) and baseline to 12 months (*p* < 0.001).  The effect sizes for the educational counseling  group were 0.59 at 6 months and 0.45 at 12 months, while the effect sizes for the traditional support and no treatment groups were 0.11 or less at 6 and 12 months.  Adverse Events: None |
| Ireland,52  1985  Australia | Baseline sample: Total n =33  Setting: University clinic  Mean Age: 55.9 y  Gender: 46.6% males  Int Grp1: 54.5% males  Int Grp2: 44.4% males  Cntrl:40.0% males  Presumed etiology of tinnitus: Idiopathic Duration of tinnitus: NR Severity of tinnitus: Other traditional treatments not recommended or had failed  Number of drop outs: 3  Reasons for drop outs: discontinued treatment  Audiological factors: NR  Comorbidities: NR | Relaxation Therapy vs wait list  Int Grp1: Relaxation training;  Int Grp2: Counterdemand, Neutral Demand  Cntrl: Wait List Cntrl  Duration of treatment: 6 weeks  Number of follow ups: 2  Duration of study: NR | Anxiety (STAI)  Depression (BDI)  Loudness (Self-reported)  TS-QOL (Tinnitus interference self-report) | No significant effects for relaxation training were found on any measure.  The BDI improved significantly from pretreatment to post-treatment, but the degree of change was equivalent for both treated and untreated groups  Adverse Events: NR |
| Kaldo,91  2007  Sweden | Baseline sample: Total n=72  Interven=34; Cntrl=38  Setting: phone calls and mailouts  Mean age (SD):  Interven=45.9 y(13.0);  Cntrl=48.5 y (15.7)  Gender:  Interven: 50% male;  Cntrl: 47.3% male  Presumed etiology of tinnitus: NR  Duration of tinnitus:  >6 months  Severity of tinnitus: Score of 10 or above on TRQ  Number of dropouts: 12  Reasons for dropouts: 4 ended treatment prematurely; 3 general reasons. 5 unclear Audiological factors: NR  Comorbidities: NR | CBT  Self-help book and brief telephone therapy Treatment group: read the self-help book and had 7 weekly phone calls from one of two therapists over a period of 6 weeks (HIGH therapist contact group)  Cntrl group: Wait-list; received self-help book and had one initial phone call after treatment group finished (LOW therapist contact group)  Measured pre-treatment, post-treatment, extra 6 week post-treatment for LOW group, and follow-up 1 yr after LOW group’s post-treatment measurement.  Comparator: Wait list  Duration of treatment: 6 weeks  Number of follow ups: 3  Duration of study: 1 yr | TS-QOL (THI, TRQ\*, VAS)  Loudness (VAS)  Depression (HADS-D)  Anxiety (HADS-A)  Sleep  (ISI) | TS-QOL: group x time interaction: (*F*(1,70)=12.4, p <0.001  On the TRQ, in the treatment group, 32% reached the criteria for clinical significance (at least 50% reduction of the TRQ) compared to 5% in the wait-list group.  In the treatment group, 32% reached the criteria for clinical significance (at least 50% reduction of the TRQ) compared to 5% in the wait-list group.  Adverse Events: NR |
| Kaldo,92  2008  Sweden | Baseline sample: Total n = 51  Interven n = 26; Cntrl n = 25  Setting: Audiology clinic, Internet  Mean age (SD):  Int: 47.4 (12.9); Cntrl: 45.0 (12.8)  Gender:  Int 58% male; Cntrl 56% male  Presumed etiology of tinnitus: Idiopathic  Duration of tinnitus:  Int: 9.9y(13.5); Cntrl: 5.6y (6.1)  Severity of tinnitus: primary problem; ≥10 TRQ (Wilson et al., 1991)  Number of dropouts: 7  Int n=4; Cntrl n=3  Reasons for dropouts: NR  Audiological factors: 33% “Much” or “very much: distressed by hearing deficit  Comorbidities: NR | Recruited by advertisements in newspapers, Wait List Cntrl for psychological treatment at the local Dept. of Audiology  Internet-administered CBT self-help  Comparator: traditional CBT group treatment  Both groups used the same treatment manual  Duration of treatment: 7 weeks  Number of followups: 1  Duration of study: 14 months | TS-QOL (THI, TRQ, VAS)  Depression (HADS-D)  Anxiety (HADS-A)  Sleep (ISI)  Loudness (VAS) | Both groups had improved, and there were few differences between them.  The effect size for the Internet treatment was d = 0.73 (95% CI = 0.16 to 1.30) and for the group treatment was d = 0.64 (95% CI = 0.07 to 1.21).  The Internet treatment consumed less therapist time and was 1.7 times as cost-effective as the group treatment.  Adverse Events: NR |
| Kröner-Herwig,93  1995  Germany | Baseline sample: Total n = 95;  TCT1 n = 7;TCT2 n = 8;  Yoga n = 9; WLC n = 19  Setting: Dept. of Audiology  Mean age (SD): Total: 46.8y (11.5);  TCT1: 44.7 y(12.7); TCT2: 48.5 y(10.6);  Yoga: 50.0 y (12.6); WLC: 47.3 y (7.9)  Gender:  TCT1: 57% male; TCT2: 50% male;  Yoga: 67% male; WLC: 63% male  Presumed etiology of tinnitus: idiopathic  Duration of tinnitus: Mean 4.5 y (range 6m to 20y)  Severity of tinnitus: >4 on a 10 point scale  Number of dropouts:  TCT1 n=3; TCT2 n=2; Yoga n=1; WLC n=3  Reasons for dropouts: NR  Audiological factors: hearing ability enough to allow communication in a group setting  Comorbidities: hearing deficits with 56% | CBT  Tinnitus Coping Training: TCT1 and TCT2 to Cntrl for therapist effect – training consisted of Patient Education (1 session); CBT (sessions 2 to 10)  Yoga (Hathayoga) – special yogic exercises to foster relaxation and adequate body perception  Comparator: Wait List Cntrl (WLC)  Duration of treatment: 10- 2 hour sessions  Number of followups: end of treatment, 3 month followup  Duration of study: 22 weeks | Loudness (Diary)  Sleep  (Diary, TQ subscale\*)  G-QOL  (TQ, Bef-Skala, Bes-Liste\*)  Depression (Dep-Skala)  TS-QOL  (Diary, TQ\*) | TS-QOL: reduced psychological impairment German version of the TQ *F*(1,32)=4.43, p ≤0.04  Statistical analyses showed effects favoring the TCT treatment in comparison to the Cntrl and yoga treatment. The TCT-treated patients reported more satisfaction with the training than the yoga group.  Adverse Events: NR |
| Kröner-Herwig,13  2003  Germany | Baseline sample: Total n = 95;  Int Grp1 n = 43;Int Grp2 n = 16;  Int Grp3 n = 16; Cntrl n = 20  Setting: varied by treatment arm  Mean age (SD): Total: 46.8y (11.5);  IntGrp1: 44.7 y(12.7); IntGrp2: 48.5 y(10.6);  IntGrp3: 50.0 y (12.6); Cntrl: 47.3 y (7.9)  Gender: Total: 48.4% male;  IntGrp1: 44.2% male; IntGrp2: 58.8% male;  IntGrp3: 46.7% male; Cntrl: 50% male  Presumed etiology: Idiopathic, exclude Moribus Meniere  Duration of tinnitus: NR  Severity: Subjective annoyance >40 on 9 scales assessing disruptiveness of tinnitus  Number of dropouts: Int Grp1 n = 13; Int Grp2 n = 4; Int Grp3 n = 4; Cntrl n = 0  Reasons for dropouts: NR  Comorbidities: NR | CBT  Tinnitus Coping Therapy (TCT); Education; Relaxation Therapy  Int Grp1: TCT= detailed training manual provided guidelines for 11 sessions  Int Grp2: Minimal Contact-Education (MC-E) comprised 2 education sessions regarding tinnitus etiology, 4 weeks self-help exercise  Int Grp3: Minimal Contact-Relaxation (MC-R) 4 sessions; educational, verbal relaxation; discussions  Comparator: Wait-list Cntrl  Duration of treatment:  Int Grp1: 11 sessions 90-120 minutes;  Int Grp2: 2 sessions (4 weeks);  Int Grp3: 4 sessions  Number of followups:  Int Grp1: 3 followups (immediately post-treatment 6 and 12 months after treatment); Int Grp2 and Int Grp3: 1 followup (immediately post-treatment)  Duration of study: NR | Depression (ADS)  G-QOL  (SCL-90R)  TS-QOL  (TDI, TQ\*, TC cope subscales)  Loudness (Diary) | TSQOL: WLC group (*F*(1,34)=6.79, p <0.01) on the TEI; TQ=NS  There is no significant superiority of TCT relative to the combined MC treatments in subjective change.  Concluded that the CBT outpatient group training of tinnitus shows good efficacy in reducing the negative impact of tinnitus on the person’s life by improving coping and reducing the threatening character of tinnitus.  Adverse Events: NR |
| Malouff,95  2010  Australia | Baseline sample: Total n = 162  Interven n = 84; Cntrl n = 78  Setting: Internet online participation  Mean age (SD):  Interven 1: 57.3y (13.7);  Cntrl: 57.8y (13.3)  Gender:  Interven: 51% male; Cntrl: 60.3% male    Presumed etiology of tinnitus: Idiopathic  Duration of tinnitus: NR  Severity of tinnitus: NR  Number of dropouts n = 35;  Interven: n = 29 (35%); Cntrl n = 8 (10%)  Reasons for dropouts: NR  Audiological factors: NR  Comorbidities: NR | Participants received a book based on cognitive-behavioral principles, including educational information on tinnitus, cognitive reappraisal and restructuring, relaxation and stress management techniques, attention Cntrl techniques, use of self-instruction, making lifestyle changes, and maintaining gains. A brief letter asking participants to read the book and to follow the suggestions it contained in the subsequent 6 weeks.  Comparator: WLC  Duration of Treatment: 2 months  Number of followups: 2m, 4m, 12m  Duration of study: NR | G-QOL  (GPQ-12)  TS-QOL  (TRQ) | Individuals in the Interven condition who completed the post-assessment experienced a significant reduction in tinnitus distress from pre-Interven to post-Interven (p =.0001].  The between-groups difference in the rates of reliable change, although in the hypothesized direction, was not statistically significant (p =.15).  Intention-to-treat analyses showed no significant effect for between-groups analyses, but did show a significant effect for the 1-year follow-up pre–post analysis.  Adverse Events: None |
| Rief,104  2005  Germany | Baseline sample: Total n= 42  Interven n = 22; Cntrl n = 20  Setting: University psychotherapy outpatient clinic  Mean age (SD):  Interven: 45.5y (12.8); Cntrl: 48.0y (15.3)  Gender:  Interven: 59.1% male; Cntrl: 40.0% male  Presumed etiology of tinnitus: NR  Duration of tinnitus:  Interven: 4.5 y (5.3); Cntrl: 8.3 y (7.7)  Severity of tinnitus: (VAS out of 10)  Interven: 6.5 (1.7); Cntrl: 5.9 (1.6)  Number of dropouts: 1  Interven n = 0; Cntrl n = 1  Reasons for dropouts: discontinued Interven  Audiological factors: hearing problems (57%)  Comorbidities: depressive disorder: 36.4% 1st Interven group; 35.0% wait list group | CBT  Training consisted of 1 pre-assessment session, 7 treatment sessions, and a final session summarizing Interven strategies and conducting post-assessment.Training was manual-guided, included handouts (basic information on ear and the hearing system; information processes involved in tinnitus; the vicious circle of tinnitus annoyance, muscular reactivity, and selective attention; and aspects of tinnitus maintenance, modulating factors,etc.).  Comparator: Waiting-list Cntrl  Setting: outpatient clinic  Duration of Treatment: 8 weeks  Number of followups: 1 (6 months)  Duration of study: October 2002 to November 2003 | TS-QOL  (TQ)  G-QOL  (HRLS\*, GSI, SCL-90R)  Loudness (diary) | On most tinnitus specific variables, patients in the treatment group improved significantly more than patients on the Wait List Cntrl.  Main effect sizes for tinnitus-specific variables were up to 0.89.  Adverse events: Participants did not report any adverse events |
| Scott,7  1985  Sweden | Baseline sample:  Total n=24; Interven=12; Cntrl=12  Setting: Department of Audiology, Hospital  Mean age: 52.6  Interven: 50.9 y; Cntrl: 54.3 y  Gender: Total: 43.4% male  Interven: 41.6% male; Cntrl: 45.5% male  Presumed etiology of tinnitus: Idiopathic  Duration of tinnitus: mean 9.4y (1-23 years)  Severity of tinnitus: grade 2 or 3 (Klockhoff & Lindblom)  Number of dropouts: 2 Cntrl group, women  Reasons for dropouts: NR  Audiological factors: All had some form of hearing impairment  Comorbidities: no retrocochlear lesions suspected | Relaxation Therapy vs wait list  The treatment comprised 10 one-hour sessions over 3 weeks: relaxation training, training of self-control by distraction exercises with the aim of reducing the discomfort from tinnitus, and application of the method in situations associated with tinnitus.  Comparator: WLC  Duration of treatment; 10 to 11 weeks  Number of follow ups: 1  Duration of study: NR | Depression (Self-report R)  TS-QOL (Self-report D)  Loudness  (Self-report D) | TS-QOL: A significant effect on both direct (group x time interaction: *F*(1,21)=6.01, p <0.05) and retrospective measures (group x time interaction: *F*(1,21)=7.92, p <0.01)  Adverse Events: 8 (38%) reported an increase of negative effects of the intensive self-monitoring on the loudness of and discomfort from their tinnitus.  14/15 patients reported a general reduction of dizziness, headache and troublesome muscle tension. |
| Weise,14  2008  Germany | Baseline sample: Total n = 111  Setting: Outpatient treatment center for psychological Intervens  Mean age (SD):  Interven: 49.5 y (11.83);  Cntrl: 52.9 y (11.92)  Gender:  Interven: 55.8% male  Cntrl: 55.9% male  Presumed etiology: Idiopathic  Duration of tinnitus: >6 months  Severity of tinnitus: High tinnitus annoyance  Number of dropouts:  Interven n = 15; Cntrl n= 20  Reasons for dropouts:  Interven: incomplete (4), discontinued Interven (7), refused follow-up assessment (4);  Cntrl=1 incomplete (1), discontinued waiting period (7), discontinued Interven (7), refused follow-up assessment (5)  Comorbidities: Depression | Biofeedback-based CBT  Interven: 12 sessions of 20 mins. of biofeedback training combined with 20 mins of CBT. Treatment over 3 months.  Comparator: Waitlist group measured at initiation, 3 months later, then had the Interven and measured again after Interven (6 months).  Duration of treatment: 3 months  Number of follow ups: 1 (6 months)  Duration of study: 9 months | Loudness (VAS)  Sleep  (VAS\*, TQ-sub)  G-QOL (GSI SCL-90-R)  Depression (BDI)  TS-QOL (TQ\*, VAS, TRSS catastrophizing, TRCS helplessness) | For the TQ and the tinnitus diary, the MANOVA showed a statistically significant group effect, *F*(13, 97) = 2.84, *p* <.01; a significant time effect, *F*(13, 97) = 14.75, *p* <.001; and a significant interaction for Time x Group, *F*(13, 97) = 5.16, *p* <.001 for the completer analysis.  Improvements were maintained over a 6-month follow-up period in which medium-to-large effect sizes were observed.  Adverse Events: Majority of the patients did not experience negative side effects caused by the treatment |
| Westin,112,  2011  Sweden | Baseline sample: n = 64  Interven1 (ACT): n = 22; Cntrl (WLC): n = 22; Interven2 (TRT): n = 20  Setting: Audiology department  Mean age (SD):  Interven1: 53.5 years (12.84)  Cntrl: 49.59 years (11.86)  Interven2: 48.95 (14.3)  Gender: 53.1% male    Presumed etiology of tinnitus: Idiopathic  Duration of tinnitus: Mean 8.3 y (SD 7.3)  Severity of tinnitus: score ≥30 on THI  Number of dropouts: 4  Reasons for dropouts: NR  Audiological factors: 12.8 dB hearing level (SD=7.1) for better ear  Comorbidities: n=49:  rheumatological conditions (n=35), cardiovascular conditions (n=10), respiratory conditions or allergy (n=10), mild to moderate depression (n=9), gastroenterological conditions (n=6), sleep problems (n=6), cancer (n=5), endocrinological conditions (n=6),  skin disease (n=2). | CBT  Acceptance and Commitment Therapy (ACT)  ACT: max 10 weekly individual sessions of 60 minutes  TRT: one 2.5 hr individual consultation session, 30 min follow-up session over telephone, wearable sound generators used min 8 hrs/day for 18 months  WLC started CBT treatment after 10 weeks    Duration of treatment: 10 weeks to 18 months  Number of follow ups: 3  Duration of study: 18 months | Sleep  (ISI)  TS-QOL  (THI)  Anxiety (HADS-A)  Depression (HADS-D)  G-QOL  (QOLI) | A comparison between the active treatments, including all assessment points, revealed significant differences in favor of ACT regarding tinnitus impact (Cohen’s d = 0.75) and problems with sleep.  No significant main effects were found. On QOL, anxiety or depression no time, group or interaction effects were found.  .Adverse Events: None |
| Zachriat,113  2004  Germany | Baseline sample: Total n = 77  TCT n = 27; HT n = 30  EDU n = 20  Setting: University Psychology department  Mean age (SD):  TCT: 53.8y (11.8); HT: 51.6y (11.0);  EDU: 56.1y(10.6)  Gender:  TCT: 59.3% male; HT: 66.7% male;  EDU: 74.0% male  Presumed etiology of tinnitus: idiopathic  Duration of tinnitus: ≥3 months (range 4 to 324 m)  Severity of tinnitus: TQ ≥ 25  Number of dropouts:  TCT n = 2; HCT n = 1; EDU n = 3  Reasons for dropouts: NR  Audiological factors: NR  Comorbidities: no treatable organic disease | HT: Habituation-based treatment, 5 sessions – counseling concentrating on education of factors having an impact on tinnitus and training in sound generator use for ≥6 hours per day  TCT: tinnitus coping training, 11 sessions, 90 to 120 minutes in groups of 6 to 8 – relaxation exercises, use of attention distraction strategies; coping techniques  EDU: (Cntrl): educational Interven, 1 session informing about physiology and psychology of tinnitus  Duration of treatment: 15 weeks  Number of followups: 3 to 27 weeks, 53 weeks, 18 to 21 months  Duration of study: NR | G-QOL  (VEV)  TS-QOL  (TQ, TCQ, JQ, Diary)  Loudness (Diary) | Findings reveal highly significant improvements in both tinnitus coping training and habituation-based treatment in comparison with the Cntrl group.  While tinnitus coping training and habituation-based treatment do not differ significantly in reduction of tinnitus disability, improvement in general well-being and adaptive behavior is greater in tinnitus coping training than habituation-based treatment.  Adverse events: NR |

\*Indicates the test used to measure outcomes which were selected to represent the domain in the forest plots (and subsequent SOE decisions)  
**Abbreviations:** A/E = Adverse events; AMT = active motor threshold; Bef-Skala = Befindlichkeits-Skala; Bes-Liste = Beschwerden-Liste; CBT = cognitive behavioral treatment; Ctrl = Control; Dep-Skala = Depressivitäts-Skala; ENT = ear, nose and throat; grp = group; G-QOL = global quality of life; HADS = Hospital Anxiety and Depression Scale; interven = Intervention; month = month; ISI = Insomnia Severity Index; N/A = not applicable; NR = not reported; OSI-R = Occupational Stress Inventory- Revised; QOL = quality of life; RCT = randomized controlled trial; SD = standard deviation; TCT = Tinnitus Coping Therapy; THI = Tinnitus Handicap Inventory; TMJ = temporal mandibular joint; TRCS = Tinnitus-Related Control Scale; TRSS = Tinnitus-related Self-Statements Scale; TS = tinnitus specific; TSQ = Tinnitus Severity Questionnaire; VAS = visual analog scale; week = week; WLC = wait list Cntrl; yr = year