SUPPLEMENTARY ONLINE APPENDIX (for references see main text)

Table A1. *Excluded studies and reason for exclusion*

Study	Reason for exclusion
Neurobiological studies	
Electroencephalogram studies	
(Hardt, 1994)	No control group
(Dunn *et al*. 1999)	No control group
(Murata *et al*. 2004)	No control group
(Kubota *et al*. 2001)	No control group
(Lo *et al*. 2003)	No statistical analysis
(Faber *et al*. 2004)	No statistical analysis; case report
(Coromaldi & Stadler, 2004)	No statistical analysis; case report
(Takahashi *et al*. 2005)	No control group
(Coromaldi *et al*. 2006)	No statistical analysis, case report
Neuro-imaging studies (fMRI)	
(Baerentsen *et al*. 2001)	No control group
(Ritskes *et al*. 2003)	No control group
(Lazar *et al*. 2003)	No statistical analysis
(Liou *et al*. 2005)	No control group
(Farb *et al*. 2007)	No control group
(Cahn & Polich, 2009)	No control group
Biochemical studies	
(Moon *et al*. 2005)	No statistical analysis
Clinical studies	
Psychiatric disorders	
(Kabat-Zinn *et al*. 1992)	No control group
(Miller *et al*. 1995)	No control group
(Kristeller & Hallet, 1999)	No control group
(Mason & Hargreaves, 2001)	No statistical analysis
(Heidenreich *et al*. 2006)	No control group
(Finucane & Mercer, 2006)	No statistical analysis
(Smith *et al*. 2007)	No statistical analysis
(Kenny & Williams, 2007)	No control group
(Eisendrath *et al*. 2008)	No control group
(Evans *et al*. 2008)	No control group
(Yook *et al*. 2008)	No control group
(Zylowska *et al*. 2008)	No control group
(Singh *et al*. 2008)	No control group
(Brotto *et al*. 2008)	No control group
Physical disorders	
(Kabat-Zinn, 1982)	No control group
(Kabat-Zinn, 1994)	No control group
(Kabat-Zinn *et al*. 1985)	No control group
(Kabat-Zinn *et al*. 1987)	No control group
(Kaplan *et al*. 1993)	No control group
(Roth & Creaser, 1997)	No control group
(Saxe *et al*. 2001)	No control group
(Altman, 2001)	No control group, no statistical analysis
(Monti, 2002)	No statistical analysis
(Roth & Stanley, 2002)	No control group
(Spahn *et al*. 2003)	No control group, no statistical analysis
(Majumdar *et al*. 2002)	No control group
(Bedard *et al*. 2003)	No control group
(Robinson *et al*. 2003)	No control group
(Brown & Ryan, 2003)	No control group
(Carlson *et al*. 2003)	No control group
(Carlson *et al*. 2004)	No control group
(Tacon *et al*. 2004)	No control group
(Gross *et al*. 2004)	No control group
(Bruce & Davies, 2005)	No statistical analysis
(Kreitzer *et al*. 2005)	No control group
(Tacon *et al*. 2005)	No control group
(Edelman *et al*. 2006)	No control group
(Carmody *et al*. 2006)	No control group
(Carlson *et al*. 2007)	No control group
(Rosenzweig *et al*. 2007)	No control group
(Dobkin, 2007)	No control group
(Davis *et al*. 2007)	No control group
(Horton-Deutsch *et al*. 2007)	No control group
(Carmody *et al*. 2008)	No control group
(Witek-Janusek *et al*. 2008)	No control group
(Dobkin, 2007)	No control group
(Gardner-Nix *et al*. 2008)	No control group
(Sibinga *et al*. 2008)	No control group
(Bauer-Wu *et al*. 2008)	No control group
(Kieviet-Stijnen *et al*. 2008)	No control group
(Carroll *et al*. 2008)	No control group, no statistical analysis
(Würtzen *et al*. 2008)	No statistical analysis
Healthy subjects	
(Lehrer *et al*. 1999)	No control group
(Beddoe & Murphy, 2004)	No control group
(Smith, 2004)	No statistical analysis
(Cysarz & Bussing, 2005)	No control group
(Ostafin *et al*. 2006)	No control group
(Oman *et al*. 2008)	Admixture of different meditations together

Table A1. (*cont.*)

Table A2. *Neuro-biological studies*

Study (year)	Subjects (country of origin)	Experimental design	Main findings*	Quality of the study
Neuro-biological studies				
Electroencephalographic studies				
(Kasamatsu & Hirai, 1966)	70: 48 meditators with different degree of experience, 22 controls (Japan)	CSC: Expert Zen meditators with different degrees of experience vs. controls	Increased alpha activity, decreased alpha frequency, frontal alpha activity and theta bursts correlated with the level of experience and nonhabituating alpha blocking in meditators (state findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: Not sure *Assessment of outcome*: Record linkage NOS score: 2
(Becker & Shapiro, 1981)	50: 10 for each included category (U.S.A.)	CSC-AT: TM, Zen meditators, Yoga vs. two control groups	No effect of meditation was detected on alpha blocking (state findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: yes *Assessment of outcome*: Record linkage NOS score: 3
(Murata *et al*. 1994)	30: 20 meditators, 10 controls (Japan)	CSC: Novice vs. expert Zen meditators vs. controls	Increased frontal alpha coherence in all meditation groups. Frontal theta activity, correlated with the degree of experience in expert meditators only (state findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: yes *Assessment of outcome*: Record linkage NOS score: 3
(Davidson *et al*. 2003)	44: 25 meditators, 19 controls (U.S.A.)	RCT: MBSR vs. waiting list	Greater activation after meditation in left C3/C4 area and a marginal association with temporal anterior activation in meditators compared to non meditators was detected (state findings)	*Randomization*: Yes *Appropriate randomization*: Unclear *Withdrawals and drop outs*: Yes *Blinding*: No *Jadad score*: 2
(Barnhofer *et al*. 2007)	22: 10 meditators, 12 controls (England)	RCT: MBCT + TAU vs. TAU	TAU group showed a significant deterioration toward decreased relative left-frontal activation, indexing decreases in positive affective style, while there was no significant change in the MBCT group (trait findings)	*Randomization*: Yes *Appropriate randomization*: Unclear *Withdrawals and drop outs*: Yes *Blinding*: No *Jadad score*: 2
Neuro-imaging studies				
(Lazar *et al*. 2005)	35: 20 long term meditators, 15 controls (U.S.A.)	CSC: Expert Vipassana meditators vs. non-meditators	Brain regions associated with attention, interoception and sensory processing, including the prefrontal cortex and right anterior insula, were thicker in meditators than matched controls (trait findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: yes *Assessment of outcome*: Record linkage NOS score: 3

Table A2. (*cont.*)

Study (year)	Subjects (country of origin)	Experimental design	Main findings*	Quality of the study
(Holzel *et al*. 2007)	30: 15 long term meditators, 15 matched controls (Germany)	CSC: Expert Vipassana meditators vs. non-meditators	In the meditation condition meditators showed stronger activations in the rostral anterior cingulate cortex and the dorsal medial prefrontal cortex bilaterally, compared to controls (state findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: yes *Assessment of outcome*: Record linkage NOS score: 3
(Pagnoni & Cekic, 2007)	26: 13 expert meditators, 13 matched controls (U.S.A.)	CSC: Expert Zen meditators vs. non meditators	Control subjects displayed the expected negative correlation of both gray matter volume and attentional performance with age; meditators did not show a significant correlation of either measure with age. The effect was most prominent in the putamen (trait findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: yes *Assessment of outcome*: Record linkage NOS score: 3
(Holzel *et al*. 2008)	40: 20 long term meditators, 20 controls (Germany)	CSC: Expert Vipassana meditators vs. non-meditators	Results showed greater gray matter concentration for meditators in the right anterior insula. Furthermore, meditators had greater gray matter concentration in the left inferior temporal gyrus and right hippocampus (trait findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: yes *Assessment of outcome*: Record linkage NOS score: 3
(Pagnoni *et al*. 2008)	24: 12 expert meditators, 12 matched controls (U.S.A.)	CSC: Expert Zen meditators vs. non meditators	Zen practitioners displayed a reduced duration of the neural response linked to conceptual processing in regions of the default network, suggesting that meditative training may foster the ability to voluntarily regulate the flow of spontaneous mentation (state findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: yes *Assessment of outcome*: Record linkage NOS score: 3
Attentional performance studies				
(Valentine & Sweet, 1999)	43: 8 MM, 11 active controls, 24 controls (U.K.)	CSC: either short and long term concentrative or mindfulness meditators vs. controls	Mindfulness meditators showed superior performance in comparison with concentrative meditators when the stimulus was unexpected but there was no difference between the two types of meditators when the stimulus was expected (trait findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: not sure *Assessment of outcome*: Record linkage NOS score: 2

Table A2. (*cont.*)

Study (year)	Subjects (country of origin)	Experimental design	Main findings*	Quality of the study
(Jha *et al*. 2007)	51: 17 MM, 17 active controls, 17 controls (U.S.A.)	CT-AC: MBSR and concentrative meditators vs. controls	At Time 1, the participants in the retreat group demonstrated improved conflict monitoring performance relative to those in the MBSR and control groups. At Time 2, the participants in the MBSR course demonstrated significantly improved orienting in comparison with the control and retreat participants (trait findings)	*Randomization*: No *Withdrawals and drop outs*: Yes *Blinding*: No *Jadad score*: 1
(Chambers *et al*. 2008)	40: 20 MM, 20 controls (Australia)	CT: Vipassana meditators vs. controls	Compared to controls, those completing the Vipassana training demonstrated significant improvements in self-reported mindfulness, depressive symptoms, rumination, and performance measures of working memory and sustained attention (trait findings)	*Randomization*: No *Withdrawals and drop outs*: Yes *Blinding*: No *Jadad score*: 1
Biological studies				
(McComb *et al*. 2004)	18: 9 meditators, 9 controls (U.S.A.)	RCT: MBSR vs. controls	There were no significant main effects or interaction for the resting levels of stress hormones or physical functioning. There were no significant interactions for the sub-maximal exercise responses in a population of women with an history of heart disease (state findings)	*Randomization*: Yes *Appropriate randomization*: Yes *Withdrawals and drop outs*: Yes *Blinding*: No *Jadad score*: 3
(Kim *et al*. 2005)	40: 20 meditators, 20 controls (Korea)	CSC: Expert Zen meditators vs. controls	Higher level of serum nitrate + nitrite concentration and a significant reduced level of serum malondialdehyde in meditators (state findings)	*Representativeness of the study group*: yes *Selection of the comparison group*: No description of the derivation of the non meditators group *Ascertainment of exposure*: no description Comparability: not sure *Assessment of outcome*: Record linkage NOS score: 3

CSC: cross-sectional study with controls; CSC-AC: cross sectional study with controls with an active treatment; RCT: randomized controlled trial; MBCT: mindfulness based cognitive therapy;. MBSR: mindfulness based stress reduction; NOS: Newcastle-Ottawa scale.

*For neuro-biological studies we reported which findings were state or trait ones.

Table A3. *Clinical studies*

Study (year)	Subjects (country of origin)	Experimental design	Main findings	Quality of the study
PSYCHIATRIC DISORDERS				
Mood disorders				
(Teasdale *et al*. 2000)	145 : 76 meditators, 69 controls (U.K.)	RCT : MBCT + TAU, vs. TAU	At one year follow up, meditators showed significantly less relapses of depression than TAU group only. Further analysis on the previous sample showed that only subjects with three or more past episodes of depression got significantly more benefits than TAU group	*Randomization* : Yes *Appropriate randomization* : Yes *Withdrawals and drop outs* : Yes *Blinding* : No *Jadad score* : 3
(Williams *et al*. 2000)	41 : 21 meditators, 20 controls (U.K.)	RCT : MBCT + TAU, vs. TAU	Depressive symptoms did not significantly improved. However a significant improvement shift from categorical towards specific memories was found in the meditation group	*Randomization* : Yes *Appropriate randomization* : Unclear *Withdrawals and drop outs* : Yes *Blinding* : No *Jadad score* : 2
(Ma & Teasdale, 2004)	75 : 37 meditators, 38 controls (U.K.)	RCT : MBCT + TAU, vs. TAU	Results showed that patients with 3 or more past episodes of depression who meditated had significantly less episodes of depression compared to controls	*Randomization* : Yes *Appropriate randomization* : No *Withdrawals and drop outs* : Yes *Blinding* : Yes *Appropriate blinding* : No *Jadad score* : 1
(Ramel *et al*. 2004)	22 : 11 meditators, 11 controls (U.S.A)	CT : MBSR vs. waiting list	A significant reduction of ruminative thinking was found in a sample of both depressive and anxious patients who practiced meditation compared to controls	*Randomization* : No *Withdrawals and drop outs* : No *Blinding* : no *Jadad score* : 0
(Kingston *et al*. 2007)	19 : 11 meditators, 8 controls (Ireland)	CT : MBCT + TAU vs. TAU	MBCT + TAU patients showed a significant higher reduction of residual depressive symptoms compared to TAU patients	*Randomization* : No *Withdrawals and drop outs* : No *Blinding* : No *Jadad score* : 0
(Williams *et al*. 2008)	48 : 27 meditators, 21 controls (U.K.)	RCT : MBCT + TAU vs. TAU	Anxiety and depression levels significantly reduced from baseline in a sample of remitted patients suffering from major depression or bipolar disorders	*Randomization* : Yes *Appropriate randomization* : yes *Withdrawals and drop outs* : yes *Blinding* : unclear *Jadad score* : 3
Anxiety disorders				
(Koszycki *et al*. 2007)	53 : 26 meditators, 27 active control group (Canada)	RCT-AT : MBCT ± drugs vs. GBCT ± drugs	In a sample of patients with social anxiety disorders, both group provided a significant benefit in term of depressive symptoms, global functioning and overall quality of life. However response and remission rates were significantly higher for patients assigned to GBCT	*Randomization* : Yes *Appropriate randomization* : Unclear *Withdrawals and drop outs* : yes *Blinding* : Yes *Appropriate blinding* : No *Jadad score* : 2

Table A3. (*cont.*)

Study (year)	Subjects (country of origin)	Experimental design	Main findings	Quality of the study
(Simpson *et al.* 2007)	88 : 29 meditators, 59 controls (U.S.A.)	CT : Vipassana vs. TAU	No significant improvement was noticed in a sample of incarcerated patients with PTSD who attended the meditation retreat compared to TAU group was found	*Randomization* : No *Withdrawals and drop outs* : No *Blinding* : No *Jadad score* : 0
Alcohol and substance abuse				
(Bowen *et al.* 2006)	173 : meditators, 116 controls	CT : Vipassana vs. TAU	Vipassana meditators three months after the retreat showed significantly less alcohol use compared to controls. Furthermore a significant reduction in psychiatric symptoms and more internal alcohol related locus of control were found	*Randomization* : No *Withdrawals and drop outs* : Yes *Blinding* : No *Jadad score* : 1
(Bowen *et al.* 2007)	173 : meditators, 116 controls	CT : Vipassana vs. TAU	In the same sample of the previous study, the authors observed that positive results were meditated by acceptance rather than suppression of thoughts	*Randomization* : No *Withdrawals and drop outs* : Yes *Blinding* : No *Jadad score* : 1
PHYSICAL DISORDERS				
Psychological symptoms in cancer				
(Speca *et al.* 2000)	90 : 53 meditators, 37 controls (Canada)	RCT : MBSR vs. waiting list	Significant decrease were found in distress and stress symptoms in the treatment group post-intervention in a sample of patients with different types of cancer. Number of minutes practiced significantly predicted decreased distress, and number of sessions attended significantly predicted stress symptoms.	*Randomization* : yes *Appropriate randomization* : yes *Drop outs and withdrawals* : Yes *Blinding* : No *Jadad score* : 3
(Carlson *et al.* 2001)	Same as Speca *et al.* (1 year follow up) (Canada)	RCT : MBSR vs. controls	Significant decreases in distress and stress scores after treatment. Scores were maintained after 6 months, but no significant improvements were observed. Total minutes of home practice significantly predicted improvements in distress from pre- to postintervention.	*Randomization* : yes *Appropriate randomization* : yes *Drop outs and withdrawals* : Yes *Blinding* : No *Jadad score* : 3
(Shapiro *et al.* 2003)	63 : 31 meditators, 32 controls (U.S.A.)	RCT-AT : MBSR vs. stress management techniques	Both MBSR and a free choice (FC) control condition produced significant improvement on daily diary sleep quality measures though neither showed significant improvement on sleep-efficiency in women with stage II breast cancer	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : yes *Blinding* : no *Jadad score* : 1
(Garland *et al.* 2007)	104 : 60 meditators, 40 healing arts (Canada)	CT-AT : MBSR vs. creative arts	Both treatment were effective : higher improvements were found in MBSR group in levels of spirituality, anxiety, overall stress symptoms and mood disturbances	*Randomization* : No *Drop outs and withdrawals* : No *Blinding* : No *Jadad score* : 0

Table A3. (*cont.*)

Study (year)	Subjects (country of origin)	Experimental design	Main findings	Quality of the study
Blood pressure				
(Stone & DeLeo, 1976)	19 : 15 meditators, 5 controls (U.S.A.)	CT : ZM vs. blood pressure checks	Patients with hypertension practicing ZM showed significantly higher decreases in blood pressure	*Randomization* : No *Drop outs and withdrawals* : No *Blinding* : No *Jadad score* : 0
(Yen *et al*. 1996)	231 : 120 meditators, 111 controls (U.K.)	RCT : ZM plus PMR vs. blood pressure checks	Patients with hypertension practicing ZM + PMR showed significantly higher decreases in blood pressure	*Randomization* : yes *Appropriate randomization* : no *Drop outs and withdrawals* : no *Blinding* : no *Jadad score* : 1
Chronic pain				
(Plews-Ogan *et al*. 2005)	30 : (division not reported) (U.S.A.)	RCT : MBSR + massage vs. TAU	MBSR + massages were more efficacious in reducing pain and psychological distress compared to TAU	*Randomization* : Yes *Appropriate randomization* : Yes *Drop outs and withdrawals* : Yes *Blinding* : No *Jadad score* : 3
(Morone *et al*. 2008)	30 : 13 meditators, 17 controls (U.S.A.)	RCT : MBSR vs. waiting list	A significant increase in pain acceptance and physical function was found in meditators compared to controls	*Randomization* : yes *Appropriate randomization* : yes *Drop outs and withdrawals* : no *Blinding* : no *Jadad score* : 2
Rheumatoid arthritis				
(Pradhan *et al*. 2007)	63 : 31 meditators, 32 controls (U.S.A.)	RCT : MBSR vs. waiting list	At 6 months, there was significant improvement in psychological distress and well-being and marginally significant improvement in depressive symptoms in meditators. However, the intervention had no impact on RA disease	*Randomization* : yes *Appropriate randomization* : yes *Drop outs and withdrawals* : no *Blinding* : yes *Appropriate blinding* : no *Jadad score* : 2
(Zautra *et al*. 2008)	144 : 47 meditators, 51 active controls, 44 controls (U.S.A.)	RCT-AT : MBSR vs. CBT vs. waiting list	CBT was more efficacious in improving pain and reducing IL-6; both CBT and MBSR groups showed more improvement in coping efficacy than did the control group. RA patients with recurrent depression benefited most from meditation across several measures, including negative and positive affect and physicians' ratings of joint tenderness	*Randomization* : yes *Appropriate randomization* : yes *Drop outs and withdrawals* : yes *Blinding* : yes *Appropriate blinding* : no *Jadad score* : 3

Table A3. (*cont.*)

Study (year)	Subjects (country of origin)	Experimental design	Main findings	Quality of the study
Fibromyalgia				
(Grossman *et al*. 2007)	58 : 39 meditators, 13 controls (Switzerland)	CT : MBSR vs. social support	MBSR provided significantly greater benefits than the control intervention on visual analogical pain, quality of life subscales, coping with pain, anxiety, depression and somatic complaints. Results were maintained at 3 years follow up	*Randomization* : no *Drop outs and withdrawals* : yes *Blinding* : no *Jadad score* : 1
(Sephton *et al*. 2007)	91 : 51 meditators, 40 controls (U.S.A.)	RCT : MBSR vs. waiting list	Depressive symptoms improved significantly in treatment versus control participants over the 3 end-point assessments	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : yes *Blinding* : yes *Appropriate blinding* : no *Jadad score* : 2
Psoriasis				
(Kabat-Zinn *et al*. 1998)	37 : 19 meditators, 18 controls (U.S.A.)	RCT : MBSR + PUVA or UVB vs. PUVA or UVB	Subjects in the meditation group reached the clearing point of their lesions significantly more rapidly than controls, for both UVB and PUVA treatments	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : yes *Blinding* : yes *Appropriate blinding* : no *Jadad score* : 2
Multiple sclerosis				
(Mills and Allen, 2000)	16 : 8 meditators, 8 control (U.K.)	CT : MBSR + TAU vs. TAU	The mindfulness group reported improvement over a broad range of symptoms. This was verified by the relatives' independent rating and maintained at 3 month follow-up.	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : yes *Blinding* : yes *Appropriate blinding* : no *Jadad score* : 2
Tinnitus				
(Sadlier *et al*. 2008)	25 : 14 meditators, 11 controls (U.K.)	CT : MBCT vs. waiting list	Subjects showed significant reductions in tinnitus variables both in the active and also in the control group. Post-therapy, no significant change was found after the waiting list period. The improvement was maintained at the four to six month period.	*Randomization* : no *Drop outs and withdrawals* : no *Blinding* : 0 *Jadad score* : 0
HIV				
(Creswell *et al*. 2009)	48 : 33 meditators, 15 controls (U.S.A.)	RCT : MBSR vs. 1 day seminary about MBSR	While participants in the 1-day control seminar showed declines in CD4 + T lymphocyte counts, counts among participants in the 8-week MBSR program were unchanged from baseline to post-intervention	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : yes *Blinding* : yes *Appropriate blinding* : no *Jadad score* : 2

Table A3. (*cont.*)

Study (year)	Subjects (country of origin)	Experimental design	Main findings	Quality of the study
HEALTHY SUBJECTS				
(Astin, 1997)	19 : 7 meditators, 12 controls (U.S.A.)	RCT : MBSR vs. waiting list	MBSR significantly reduced stress and many parameters including depression, and anxiety score, and improved interpersonal sensitivity	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : yes *Blinding* : no *Jadad score* : 2
(Emavardhana & Tori, 1997)	719 : 438 meditators, 281 controls (Thailand)	CT : Vipassana vs. matched controls	College students and teachers who meditated developed more mature defence and copying strategies characterized by greater maturity and tolerance of common stressors	*Randomization* : no *Description of withdrawals and drop-outs* : no *Double blinding* : no Jadad score : 0
(Shapiro *et al*. 1998)	73 : 36 meditators, 37 controls (U.S.A.)	RCT : MBSR vs. waiting list	MBSR reduced self-reported state and trait anxiety and reports of overall psychological distress in a sample of medical and premedical students	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : no *Blinding* : no *Jadad score* : 1
(Gillani & Smith, 2001)	83 : 59 meditators, 24 controls (U.S.A.)	CSC : long term Zen meditators vs. controls reading popular magazines	After the practice, meditators experienced higher relaxation, mental quietness and sensation of timeless/boundless/infinity	*Representativeness of the study group* : yes *Selection of the comparison group* : No description of the derivation of the non meditators group *Ascertainment of exposure* : no description *Comparability* : yes *Assessment of outcome* : self reports instruments *NOS score* : 2
(Rosenzweig *et al*. 2003)	302 : 140 meditators, 162 controls (U.S.A.)	CT : MBSR vs. waiting list	Medical students who practiced MBSR scored significantly lower in total mood disturbance at the completion of the intervention period	*Randomization* : no *Drop outs and withdrawals* : no *Blinding* : no *Jadad score* : 0
(Cohen-Katz *et al*. 2005)	25 : 12 meditators, 13 controls (U.S.A.)	RCT : MBSR vs. waiting list	Treatment group participants reduced their stress levels significantly more than waiting-list controls in a sample of nurses. Changes were maintained as long as 3-month posttreatment	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : no *Blinding* : no *Jadad score* : 1
(Shapiro *et al*. 2005)	28 : 10 meditators, 18 controls (U.S.A.)	RCT : MBSR vs. waiting list	Health care professionals who attended the meditation program showed significant reduction of stress levels and increases in quality of life and self-compassion levels	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : yes *Blinding* : no *Jadad score* : 2

Table A3. (*cont.*)

Study (year)	Subjects (country of origin)	Experimental design	Main findings	Quality of the study
(Shapiro *et al.* 2007)	54 : 22 meditators, 32 controls (U.S.A.)	CT : MBSR vs. weekly meetings	Therapists in training who participated to the MBSR program reported significant declines in stress, negative affect, rumination, state and trait anxiety, and significant increases in positive affect and self-compassion. MBSR participation was associated with increases in mindfulness, and this enhancement was related to the beneficial effects	*Randomization* : no *Drop outs and withdrawals* : no *Blinding* : no *Jadad score* : 0
(Jain *et al.* 2007)	81 : 27 MBSR, 24 relaxation training, 30 controls (U.S.A.)	RCT-AT : MM vs. relaxation training vs. waiting list	The meditation group of health care professionals showed a larger effect size for positive states of mind and pre-post decreases in both distractive and ruminative thoughts/behaviours	*Randomization* : yes *Appropriate randomization* : yes *Drop outs and withdrawals* : yes *Blinding* : no *Jadad score* : 3
(Klatt *et al.* 2008)	42 : 22 MBSR, 20 waiting list (U.S.A.)	RCT : briefer MBSR course vs. waiting list	A sample of staff employed in a university who practiced MBSR improved in levels of mindfulness, perceived stress and global sleep measures. No significant differences were found in cortisol levels	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : no *Blinding* : no *Jadad score* : 1
(Vieten & Astin, 2008)	31 : 13 meditators, 18 controls (U.S.A.)	RCT : MBSR vs. waiting list	In a sample of pregnant women between 12th and 30th week of gestation, mothers who received the intervention showed significantly reduced anxiety and negative affect in comparison to those who did not receive the intervention.	*Randomization* : yes *Appropriate randomization* : unclear *Drop outs and withdrawals* : yes *Blinding* : no *Jadad score* : 2

CSC : cross-sectional study with controls ; CSC-AC : cross sectional study with controls with an active treatment ; RCT : randomized controlled trial ; RCT-AT : randomized controlled trial with an active treatment ; CT : controlled trial ; CT-AT : controlled trial with an active treatment ; MBCT : mindfulness based cognitive therapy ; MBSR : mindfulness based stress reduction ; PTSD : post traumatic stress disorder ; NOS : Newcastle-Ottawa scale.

Table A4. *Characteristics of included studies*

11 cross-over studies with controls

Becker & Shapiro, 1981; Gillani & Smith, 2001; Holzel *et al*. 2008; Holzel *et al*. 2007; Kasamatsu & Hirai, 1966; Kim *et al*. 2005; Lazar *et al*. 2005; Murata *et al*. 1994; Pagnoni & Cekic, 2007; Pagnoni *et al*. 2008; Valentine & Sweet, 1999

15 controlled studies

(Bowen *et al*. 2006; Bowen *et al*. 2007; Chambers *et al*. 2008; Emavardhana & Tori, 1997; Garland *et al*. 2007; Grossman *et al*. 2007; Jha *et al*. 2007; Kingston *et al*. 2007; Mills & Allen, 2000; Ramel *et al*. 2004; Rosenzweig *et al*. 2003; Sadlier *et al*. 2008; Shapiro *et al*. 2007; Simpson *et al*. 2007; Stone & DeLeo, 1976)

26 randomized controlled studies

Astin, 1997; Barnhofer *et al*. 2007; Carlson *et al*. 2001; Cohen-Katz *et al*. 2005; Creswell *et al*. 2009; Davidson *et al*. 2003; Jain *et al*. 2007; Kabat-Zinn *et al*. 1998; Klatt *et al*. 2008; Koszycki *et al*. 2007; Ma & Teasdale, 2004; McComb *et al*. 2004; Morone *et al*. 2008; Plews-Ogan *et al*. 2005; Pradhan *et al*. 2007; Sephton *et al*. 2007; Shapiro *et al*. 2005; Shapiro *et al*. 2003; Shapiro *et al*. 1998; Speca *et al*. 2000; Teasdale *et al*. 2000; Vieten & Astin, 2008; Williams *et al*. 2000; Williams *et al*. 2008; Yen *et al*. 1996; Zautra *et al*. 2008

A first split in the Results section was performed between

'*neuro-biological studies*' (*15 studies*)

Barnhofer *et al*. 2007; Becker & Shapiro, 1981; Chambers *et al*. 2008; Davidson *et al*. 2003; Holzel *et al*. 2008; Holzel *et al*. 2007; Jha *et al*. 2007; Kasamatsu & Hirai, 1966; Kim *et al*. 2005; Lazar *et al*. 2005; McComb *et al*. 2004; Murata *et al*. 1994; Pagnoni & Cekic, 2007; Pagnoni *et al*. 2008; Valentine & Sweet, 1999

and '*clinical studies*' (*37 studies*)

Astin, 1997; Bowen *et al*. 2006; Bowen *et al*. 2007; Carlson *et al*. 2001; Cohen-Katz *et al*. 2005; Creswell *et al*. 2009; Emavardhana & Tori, 1997; Garland *et al*. 2007; Gillani & Smith, 2001; Grossman *et al*. 2007; Jain *et al*. 2007; Kabat-Zinn *et al*. 1998; Kingston *et al*. 2007; Klatt *et al*. 2008; Koszycki *et al*. 2007; Ma & Teasdale, 2004; Mills & Allen, 2000; Morone *et al*. 2008; Plews-Ogan *et al*. 2005; Pradhan *et al*. 2007; Ramel *et al*. 2004; Rosenzweig *et al*. 2003; Sadlier *et al*. 2008; Sephton *et al*. 2007; Shapiro *et al*. 2005; Shapiro *et al*. 2007; Shapiro *et al*. 2003; Shapiro *et al*. 1998; Simpson *et al*. 2007; Speca *et al*. 2000; Stone & DeLeo, 1976; Teasdale *et al*. 2000; Vieten & Astin, 2008; Williams *et al*. 2000; Williams *et al*. 2008; Yen *et al*. 1996; Zautra *et al*. 2008

On the bases of the investigated outcomes, the *first group of studies was further divided into*:

'*electro-encephalographic* (*EEG*) *studies*' (*5 studies*)

Barnhofer *et al*. 2007; Becker & Shapiro, 1981; Davidson *et al*. 2003; Kasamatsu & Hirai, 1966; Murata *et al*. 1994

'*neuro-imaging studies*' (*5 studies*)

Holzel *et al*. 2008; Holzel *et al*. 2007; Lazar *et al*. 2005; Pagnoni & Cekic, 2007; Pagnoni *et al*. 2008

attentional performance studies (*3 studies*)

Chambers & Allen, 2005; Jha *et al*. 2007; Valentine & Sweet, 1999

'*biochemical studies*' (2 studies)

Kim *et al*. 2005; McComb *et al*. 2004

The second group of studies was further divided into:

'*psychiatric disorders*' (*10 studies*)

Bowen *et al*. 2006; Bowen *et al*. 2007; Kingston *et al*. 2007; Koszycki *et al*. 2007; Ma & Teasdale, 2004; Ramel *et al*. 2004; Simpson *et al*. 2007; Teasdale *et al*. 2000; Williams *et al*. 2000; Williams *et al*. 2008

'*physical disorders*' (*16 studies*)

(Carlson *et al*. 2001; Creswell *et al*. 2009; Garland *et al*. 2007; Grossman *et al*. 2007; Kabat-Zinn *et al*. 1998; Mills & Allen, 2000; Morone *et al*. 2008; Plews-Ogan *et al*. 2005; Pradhan *et al*. 2007; Sadlier *et al*. 2008; Sephton *et al*. 2007; Shapiro *et al*. 2003; Speca *et al*. 2000; Stone & DeLeo, 1976; Yen *et al*. 1996; Zautra *et al*. 2008)

'*healthy subjects*' (*11 studies*)

Astin, 1997; Cohen-Katz *et al*. 2005; Emavardhana & Tori, 1997; Gillani & Smith, 2001; Jain *et al*. 2007; Klatt *et al*. 2008; Rosenzweig *et al*. 2003; Shapiro *et al*. 2005; Shapiro *et al*. 2007; Shapiro *et al*. 1998; Vieten & Astin, 2008

7 studies included an active comparator

(Becker & Shapiro, 1981; Garland *et al*. 2007; Jain *et al*. 2007; Koszycki *et al*. 2007; Shapiro *et al*. 2003; Valentine & Sweet, 1999; Zautra *et al*. 2008)

Of the included studies, 8 randomized controlled studies (Carlson *et al*. 2001; Jain *et al*. 2007; McComb *et al*. 2004; Plews-Ogan *et al*. 2005; Speca *et al*. 2000; Teasdale *et al*. 2000; Williams *et al*. 2008; Zautra *et al*. 2008) and 7 cross-sectional studies with controls (Becker & Shapiro, 1981; Holzel *et al*. 2008; Holzel *et al*. 2007; Lazar *et al*. 2005; Murata *et al*. 1994; Pagnoni & Cekic, 2007; Pagnoni *et al*. 2008) were considered of high quality (NOS or Jadad score $\geqslant 3$)