NKR 22: Høfeber og allergisk helårssnue (allergisk rhinoconjunctivitis), PICO 9: Husstøvmide reduktion

Review information

Authors

Sundhedsstyrelsen [1]

[1] [Empty affiliation]

Citation example: S. NKR 22: Høfeber og allergisk helårssnue (allergisk rhinoconjunctivitis), PICO 9: Husstøvmide reduktion. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

Characteristics of studies

Characteristics of included studies

Antonicelli 1991

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	unclear
Allocation concealment (selection bias)	Unclear risk	unclear
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	High risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	High risk	Very small group

Bernstein 1995

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Low risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Unclear risk	Unclear

Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Brehler 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Unclear risk	Unclear
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Low risk	
Other bias	High risk	

Ghazala 2004

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Low risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Unclear risk	Unclear

Incorvaia 2008

Methods	
Participants	
Interventions	
Outcomes	
Identification	

Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	
Allocation concealment (selection bias)	High risk	
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	High risk	
Incomplete outcome data (attrition bias)	High risk	
Selective reporting (reporting bias)	Low risk	
Other bias	High risk	

Kniest 1991

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Low risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Unclear risk	Unclear
Other bias	Unclear risk	Unclear

Moon 1999

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Unclear risk	Unclear
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear
Blinding of outcome assessment (detection bias)	Unclear risk	Unclear
Incomplete outcome data (attrition bias)	Low risk	

Selective reporting (reporting bias)	Low risk	
Other bias	Unclear risk	Unclear

Reisman 1990

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Low risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	High risk	

Stillerman 2010

Methods	**Study design:** Randomized controlled trial **Study grouping:** Crossover **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** Active all patients ● *Age*: 39,1 ● *Female*: 63% ● *Male*: 37% ● *Mild intermittent asthma*: 26% ● *TSS on waking*: 9.2 ● *TSS daytime*: 9.1 ● *TSS before bed*: 7.8 ● *TSS overnight*: 7.8 ● *NRQLQ score composite*: 3.16 ● *Dust mite allegen sensitized*: 89% ● *Dog allergen sensitized*: 46% ● *Cat allergen sensitized*: 57% Placebo all patients ● *Age*: 39,1 ● *Female*: 63% ● *Male*: 37% ● *Mild intermittent asthma*: 26% ● *TSS on waking*: 9.2 ● *TSS daytime*: 9.1 ● *TSS before bed*: 7.8 ● *TSS overnight*: 7.8 ● *NRQLQ score composite*: 3.16 ● *Dust mite allegen sensitized*: 89% ● *Dog allergen sensitized*: 46%

	● *Cat allergen sensitized*: 57% **Included criteria:** Adults with a more than 1-year history of PARC (perenial allergic rhinoconjuntivitis) and sensitivity to dust mite, dog, or cat allergen. They should agree to sleep in their bedroom, not to modify their bedroom environment and not to be away from home for more than 2 days during any treatment period. At least 1 nocturnal nasal symptom (moderate to severe) and at least 80% diary compliance during screening. **Excluded criteria:** Patients with a relevant seasonal allergy. Asthma, except mild intermittent asthma. Pregnancy, rhinitis medicamentosa, severe nasal obstruction, upper respiratory tract infection, rhinosinuitis, use of nasal CPAP, ocular or nasal allergy medication use in predetermined periods before screening.
Interventions	**Intervention Characteristics** Active all patients ● *Treatment then placebo*: 1-week run-in, 2-week active treatment, 1-week washout,2-week placebo treatment, and 1-week washout. During treatmentperiods, patients slept on the assigned PAF device. Duringwashout and run-in periods, patients slept in their bedroomswithout a PAF treatment device and using their own pillow.Active PAF treatment consisted of a pillow coverlet that encased thepillow in a dust mite barrier fabric (1-m pore size) andaccepted a HEPA-filtered (Technostat 500 g/m; Hollingsworth Vose, Kentmere, England) airstream from a bedsideblower (Fig 2). Active treatment created a breathing zone offiltered air around the patient's head. ● *Placebo then treatment*: 1-week run-in, 2-week placebo treatment, 1-week washout,2-week active tratment, and 1-week washout. During treatmentperiods, patients slept on the assigned PAF device. Duringwashout and run-in periods, patients slept in their bedroomswithout a PAF treatment device and using their own pillow.Active PAF treatment consisted of a pillow coverlet that encased thepillow in a dust mite barrier fabric (1-m pore size) andaccepted a HEPA-filtered (Technostat 500 g/m; Hollingsworth Vose, Kentmere, England) airstream from a bedsideblower (Fig 2). Active treatment created a breathing zone offiltered air around the patient's head. Placebo all patients ● *Treatment then placebo*: 1-week run-in, 2-week active treatment, 1-week washout,2-week placebo treatment, and 1-week washout. During treatmentperiods, patients slept on the assigned PAF device. Duringwashout and run-in periods, patients slept in their bedroomswithout a PAF treatment device and using their own pillow.Placebo PAF treatment was identical in construction, look, and feel to active treatmentexcept that the HEPA filter was blocked by an internalair-impermeable barrier that vented the airflow around theperiphery of the HEPA filter. Although placebo PAF treatmentdid not create a purified breathing zone, it did serve asa pillow dust mite barrier. ● *Placebo then treatment*: 1-week run-in, 2-week placebo treatment, 1-week washout,2-week active treatment, and 1-week washout. During treatmentperiods, patients slept on the assigned PAF device. Duringwashout and run-in periods, patients slept in their bedroomswithout a PAF treatment device and using their own pillow.Placebo PAF

	treatment was identical in construction, look, and feel to active treatmentexcept that the HEPA filter was blocked by an internalair-impermeable barrier that vented the airflow around theperiphery of the HEPA filter. Although placebo PAF treatmentdid not create a purified breathing zone, it did serve asa pillow dust mite barrier.
Outcomes	*Continuous*: ● Change in congestion ● Change in intching ● Change in rhinorrhea ● Change in sneezing ● Total nasal symptom score ● Ocular symptoms ● Total symptom score ● NRQLQ composite score
Identification	**Sponsorship source:** **Country:** **Setting:** **Comments:** **Authors name:** Allan Stillerman, Christopher Nachtsheim, William Li, Mark Albrecht and Joshua Waldman **Institution:** Clinical Research Institute Inc of Minneapolis **Email:** **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** *Morten SchjøRring Opstrup* Table 1. **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "Patients were assigned to placebo-then-active or active-then-placebo treatments." Comment: From text: "Patient were assigned to placebo-then active or active-then -placebo" and "Patients were assigned on a rolling basis to the following periods: 1-week run in, 2-weeks treatment, 1-week washout, 2-week treatment, and 1-week washout". It is thus not clear exactly how the allocation sequence was generated.
Allocation concealment (selection bias)	Low risk	Quote: "An in- dexed list of enrollment numbers and matching PAF devices in sealed envelopes" Comment: From text: "Patient were assigned to placebo-then active or active-then -placebo" and "An indexed list of enrollment numbers and matching PAF devices in Sealed envelopes was used to blind the researchers". Thus it appears that the allocation was adequately concealed.
Blinding of participants and personnel (performance bias)	Low risk	Quote: "was used to blind the researchers." Comment: From text: "Patient were assigned to placebo-then active or active-then -placebo" and "An indexed list of enrollment numbers and matching PAF devices in Sealed envelopes was used to blind the researchers" and "Placebo PAF treatment was identical in Construction, look and feel to active treatment". Only during the 2. treatment period engineering staff from PureZone Technologies LLC performed inhome visits to collect dust samples. Thus, it appears that knowledge of the allocated intervention was adequately prevented during the study.
Blinding of outcome assessment (detection bias)	Low risk	Comment: See above. Besides from text "Patients were assessed at the Clinic by licensed medical physicians and study coordinators". Thus it appears that knowledge of the allocated intervention was adequately prevented during the study.
Incomplete outcome data (attrition bias)	Low risk	Quote: "Of 48 patients screened, 38 were randomized; 3 patients were dropped from the study because of noncompliance, resulting in an entire study population of 35 individuals." Comment: It appears that all randomized participants completed the study and that there is no incomplete data.
Selective reporting (reporting bias)	Unclear risk	Comment: Not described. No protocol found. Symptom outcome used. Quality of life used. They use amount of house dust mites at baseline but not as a result.

Other bias	High risk	Comment: The authors have affiliations with the company. They include patients that are sensitized to house dust mite, dog or cat allergen.Possible confounders is not described. Allergy medications and ocular preparations was prohibited, but there is no information whether the participants in fact was compliant to this. likewise, there is no information about relevant background informations such as tobacco smoking and other indoor factors. Neither any information about possible avoidance behavior such as getting rid of pets, as well as if there differences according to time of year since the study was performed spring and summer.

Terreehorst 2003

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	Estimates and bias assessment are from Sheikh et al 2010

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	Low risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Footnotes

Characteristics of excluded studies

Adham 2012

Reason for exclusion	Wrong patient population

Gehring 2012

Reason for exclusion	Wrong patient population

Ho 2012

Reason for exclusion	Only published as a conference abstract

Mohan 2011

Reason for exclusion	Wrong outcomes

Muche Borowski 2010

Reason for exclusion	Wrong patient population

Portnoy 2013

Reason for exclusion	It is a systematic review on exposure control. Not much on effect on morbidity and nothing about allergic rhinitis

Vosicka 2011

Reason for exclusion	A preliminary very small study only published as a conference anstract

Footnotes

Characteristics of studies awaiting classification

Footnotes

Characteristics of ongoing studies

Footnotes

References to studies

Included studies

Antonicelli 1991

[Empty]

Bernstein 1995

[Empty]

Brehler 2006

[Empty]

Ghazala 2004

[Empty]

Incorvaia 2008

[Empty]

Kniest 1991

[Empty]

Moon 1999

[Empty]

Reisman 1990

[Empty]

Stillerman 2010

Stillerman,A.; Nachtsheim,C.; Li,W.; Albrecht,M.; Waldman,J.. Efficacy of a novel air filtration pillow for avoidance of perennial allergens in symptomatic adults.. Annals of Allergy, Asthma and Immunology 2010;104(5):440-449. [DOI: http://dx.doi.org/10.1016/j.anai.2010.03.006]

Terreehorst 2003

[Empty]

Excluded studies

Adham 2012

Adham TM.; Tawfik SA.. Dermatophagoides in childhood asthma. Allergy to dermatophagoides associates more severe childhood asthma with a potential role for acaricides.. Saudi medical journal 2012;33(3):292-7. [DOI:]

Gehring 2012

Gehring U.; de Jongste JC.; Kerkhof M.; Oldewening M.; Postma D.; van Strien RT.; Wijga AH.; Willers SM.; Wolse A.; Gerritsen J.; Smit HA.; Brunekreef B.. The 8-year follow-up of the PIAMA intervention study assessing the effect of mite-impermeable mattress covers.. Allergy 2012;67(2):248-56. [DOI: 10.1111/j.1398-9995.2011.02739.x]

Ho 2012

Ho,A.; Vosicka,K.; Gore,R. B.; Svensson,P.; Warner,J. O.; Boyle,R. J.. Effect of temperature-controlled laminar airflow on symptoms and sleep quality in perennial allergic rhinitis.. Clinical and Experimental Allergy 2012;42(12):1839-1840. [DOI: http://dx.doi.org/10.1111/cea.12033]

Mohan 2011

Mohan L; Hanna H; Warner J; Boyle R. Effects of temperature-controlled laminar airflow on sleep quality in children with perennial allergic asthma and rhinitis.. Allergy: European Journal of Allergy and Clinical Immunology. Conference: 30th Congress of the European Academy of Allergy and Clinical Immunology Istanbul Turkey. Conference Start: 20110611 Conference End: 20110615. Conference Publication: (var.pagings) 2011;66(S94):74-5. [DOI: 10.1111/j.1398-9995.2011.02604.x]

Muche Borowski 2010

Muche-Borowski C. Kopp M. Reese I. Sitter H. Werfel T. Schafer T. German Society for Allergology and Clinical Immunology (DGAKI). Society of German Allergologists (ADA). German Society for Pediatric and Adolescent Medicine (DGKJ). German Society of Dermatology (DDG). German Society of Pediatric Allergology (GPA). Allergy prevention.. Journal der Deutschen Dermatologischen Gesellschaft 2010;8(9):718-724. [DOI: http://dx.doi.org/10.1111/j.1610-0387.2009.07313.x]

Portnoy 2013

Portnoy,J.; Williams,P. B.; Chew,G. L.; Miller,J. D.; Zaitoun,F.; Phipatanakul,W.; Kennedy,K.; Barnes,C.; Grimes,C.; Larenas-Linnemann,D.; Sublett,J.; Bernstein,D.; Blessing-Moore,J.; Khan,D.; Lang,D.; Nicklas,R.; Oppenheimer,J.; Randolph,C.; Schuller,D.; Spector,S.; Tilles,S. A.; Wallace,D.. Environmental assessment and exposure control of dust mites: A practice parameter.. Annals of Allergy, Asthma and Immunology 2013;111(6):465-507. [DOI: http://dx.doi.org/10.1016/j.anai.2013.09.018]

Vosicka 2011

Vosicka,K.; Di Pasquale,J.; Gore,R.; Fleming,L.; Warner,J. O.; Habibi,P.; Boyle,R. J.. Effects of Temperature-controlled laminar airflow on sleep quality in allergic rhinitis: A pilot study.. Clinical and Experimental Allergy 2011;41(12):1847. [DOI: http://dx.doi.org/10.1111/j.1365-2222.2011.03897.x]

Data and analyses

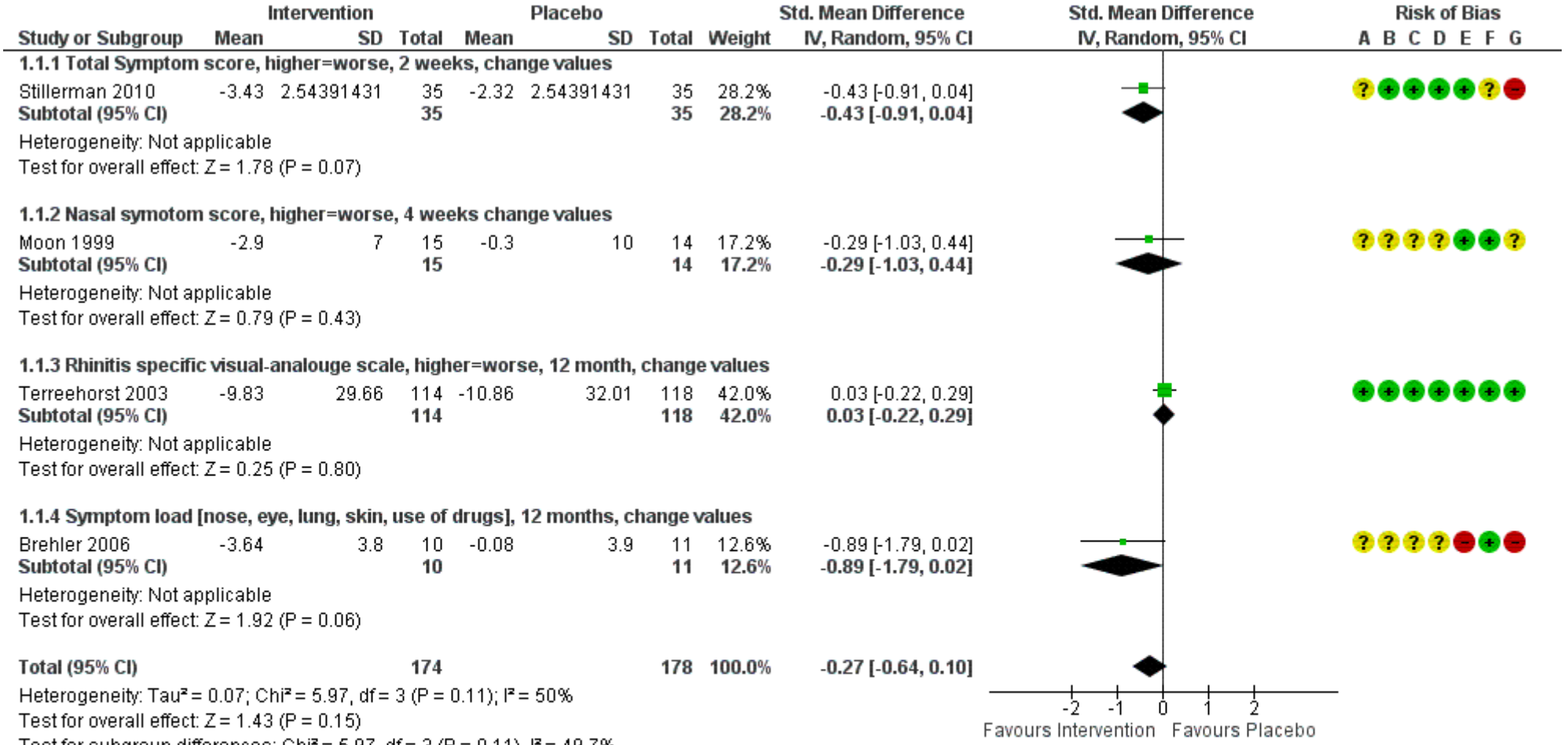
1 Active all patients vs Placebo all patients

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate

1.1 Symptom score (symptom score)	4	352	Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-0.64, 0.10]
1.1.1 Total Symptom score, higher=worse, 2 weeks, change values	1	70	Std. Mean Difference (IV, Random, 95% CI)	-0.43 [-0.91, 0.04]
1.1.2 Nasal symotom score, higher=worse, 4 weeks change values	1	29	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-1.03, 0.44]
1.1.3 Rhinitis specific visual-analouge scale, higher=worse, 12 month, change values	1	232	Std. Mean Difference (IV, Random, 95% CI)	0.03 [-0.22, 0.29]
1.1.4 Symptom load [nose, eye, lung, skin, use of drugs], 12 months, change values	1	21	Std. Mean Difference (IV, Random, 95% CI)	-0.89 [-1.79, 0.02]
1.2 Hustøvmide mængde (House dust mites level)	5	339	Std. Mean Difference (IV, Random, 95% CI)	-0.69 [-1.40, 0.02]
1.2.1 House dust mite level, higher=worse, follow up 2 weeks to 12 months	4	319	Std. Mean Difference (IV, Random, 95% CI)	-0.75 [-1.58, 0.08]
1.2.3 Airborn particle count, HEPA filter, follow up, 8 weeks	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.41 [-1.31, 0.50]
1.7 Livskvalitet (Quality of life)	2	95	Std. Mean Difference (IV, Random, 95% CI)	-0.44 [-0.88, 0.01]
1.7.1 NRQLQ composite score higher = worse, 6 months, change from baseline	1	70	Std. Mean Difference (IV, Random, 95% CI)	-0.30 [-0.77, 0.17]
1.7.2 RQLQ questionare on rhinitis, E.F. Juniper, Higher=worse	1	25	Std. Mean Difference (IV, Random, 95% CI)	-0.81 [-1.63, 0.01]
1.8 Fraværsdage fra arbejde/skole (Days away from school/work)	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable

Figures

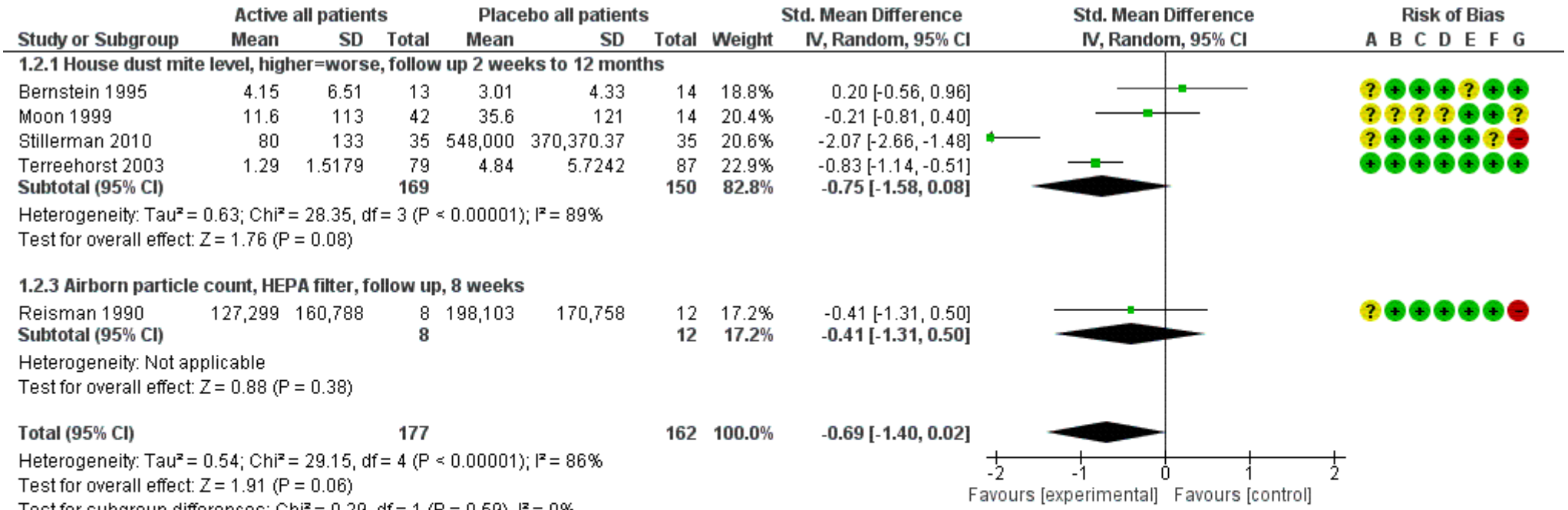
Figure 1 (Analysis 1.1)



(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 1 Active all patients vs Placebo all patients, outcome: 1.1 Symptom score (symptom score).

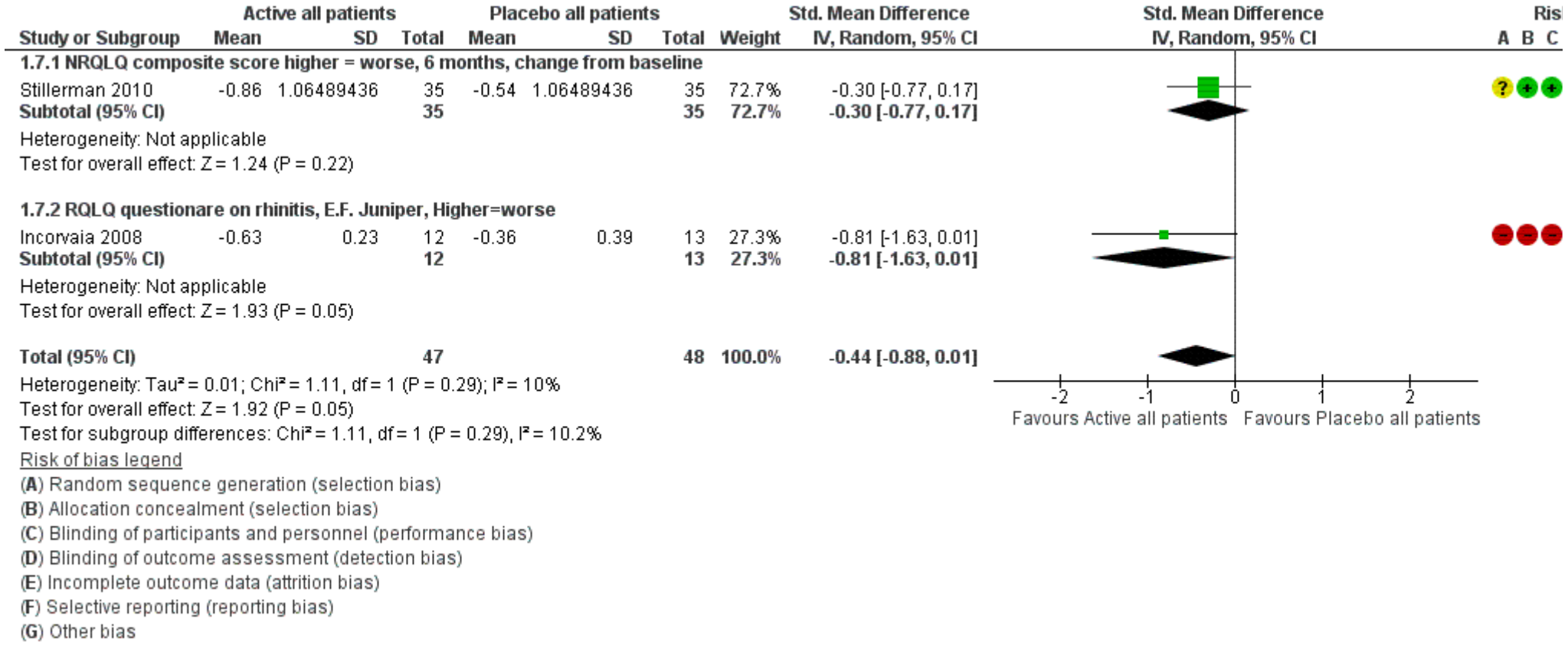
Figure 2 (Analysis 1.2)



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 1 Active all patients vs Placebo all patients, outcome: 1.2 Hustøvmide mængde (House dust mites level).

Figure 3 (Analysis 1.7)



Forest plot of comparison: 1 Active all patients vs Placebo all patients, outcome: 1.7 Livskvalitet (Quality of life).