EUMASS Congress 2018 Maastricht
Building Bridges Between Science and Practice

Return to work in patients undergoing SCS implantation for chronic pain:

a systematic review and meta-analysis

VRIJE UNIVERSITEIT BRUSSEL

Maarten Moens, MD, PhD

Lisa Goudman, MT, MSc

Universitair Ziekenhuis Brussel

Neuromodulation: Technology at the Neural Interf

Received: March 3, 2018 Revised: May 1, 2018 Accepted: May 1, 2018

(onlinelibrary.wiley.com) DOI: 10.1111/ner.12797

Return to Work of Patients Treated With Spinal Cord Stimulation for Chronic Pain: A Systematic Review and Meta-Analysis

Maarten Moens, MD, PhD*†‡§; Lisa Goudman, MSc*§; Raf Brouns MD, PhD¶; Alexis Valenzuela Espinoza MSc††; Mats De Jaeger, MSc*; Eva Huysmans, MSc†††‡‡; Koen Putman, PhD††; Jan Verlooy, MD, PhD§§**

Objectives: epidemiological review

1. Investigating whether patients with chronic pain treated with SCS return to (their previous) professional situation or not
2. Investigating the incremental amount of returning to work

PICO

Population: Adults suffering from chronic pain
Intervention: Spinal Cord Stimulation
Control: /
Outcome: Return to work

Databases:

- PubMed
- Web of Science
- SCOPUS
- EMBASE

In-and exclusion criteria

Exclusion	Inclusion
Reviews, case reports	Experimental, quasi-experimental studies, observational
Acute pain	Subacute, Chronic pain
Other than English/Dutch/French/German	English, Dutch, French, German
Non-human	Human
Ganglion stimulation, intrathecal pumps	Spinal cord stimulation

Review registration: CRD42017077803

PROSPERO
International prospective register of systematic reviews

NHS
National Institute for Health Research

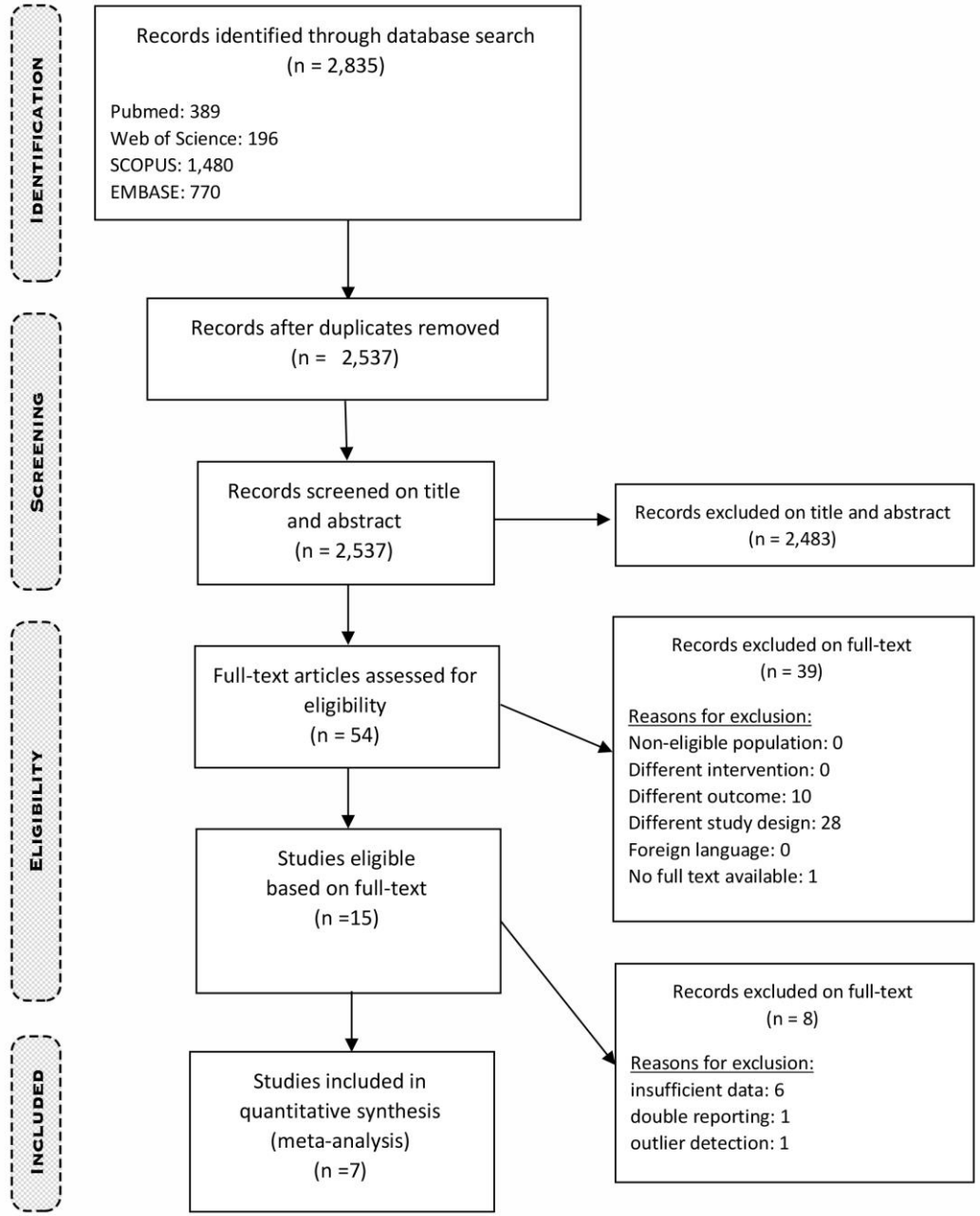
Return to work in patients undergoing spinal cord stimulation for chronic pain

Maarten Moens, Lisa Goudman, Raf Brouns, Jan Verlooy

Citation

Maarten Moens, Lisa Goudman, Raf Brouns, Jan Verlooy. Return to work in patients undergoing spinal cord stimulation for chronic pain. PROSPERO 2017 CRD42017077803 Available from: http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42017077803

Inter-rater agreement: 99.6%


IDENTIFICATION
SCREENING
ELIGIBILITY
INCLUDED
Records identified through database search
(n = 2,835)
Pubmed: 389
Web of Science: 196
SCOPUS: 1,480
EMBASE: 770
Records after duplicates removed
(n = 2,537)
Records screened on title and abstract
(n = 2,537)
Records excluded on title and abstract
(n = 2,483)
Full-text articles assessed for eligibility
(n = 54)
Records excluded on full-text
(n = 39)
Reasons for exclusion:
Non-eligible population: 0
Different intervention: 0
Different outcome: 10
Different study design: 28
Foreign language: 0
No full text available: 1
Studies eligible based on full-text
(n =15)
Records excluded on full-text
(n = 8)
Reasons for exclusion:
insufficient data: 6
double reporting: 1
outlier detection: 1
Studies included in quantitative synthesis (meta-analysis)
(n =7)

Supplementary Table S3. Downs and Black checklist[1]

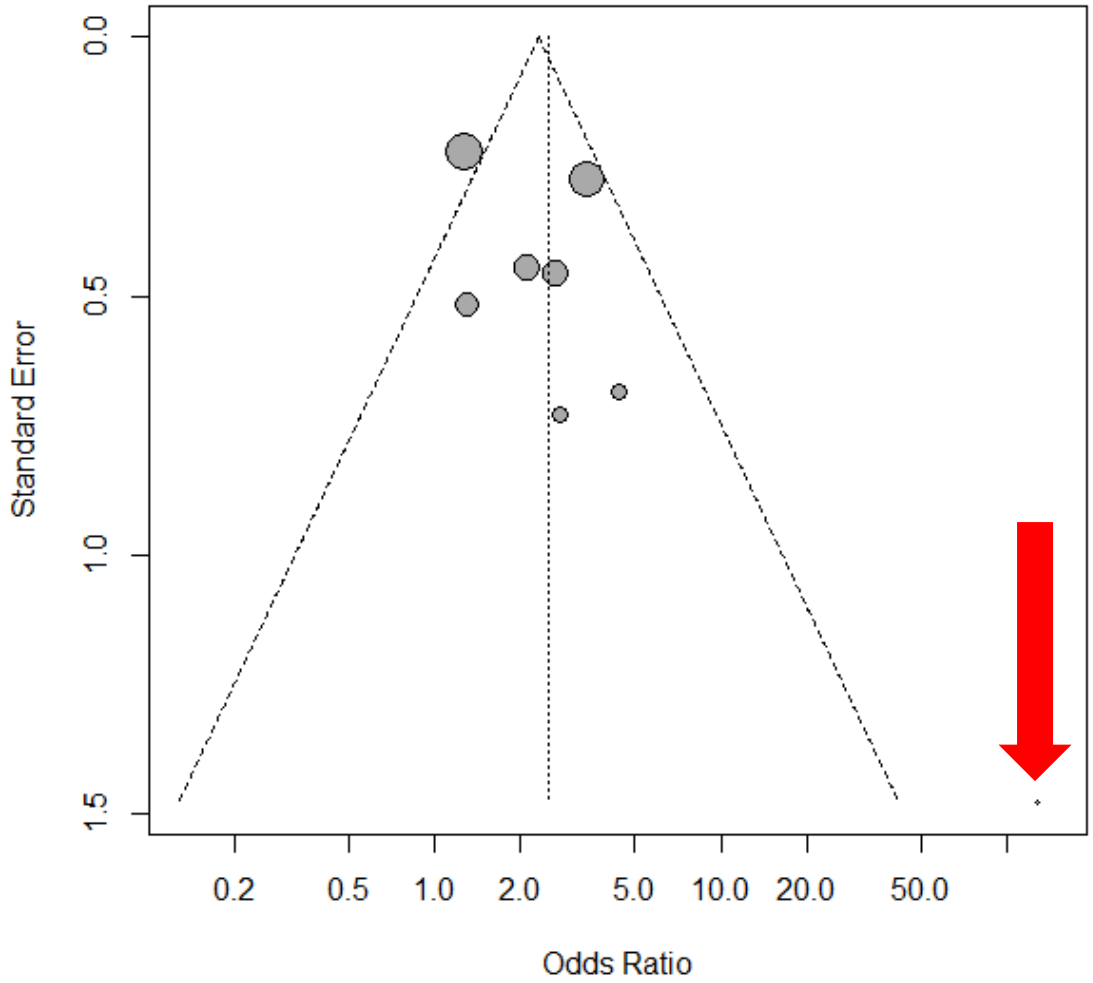
Reporting	
1. **Is the hypothesis/aim/objective of the study clearly described?**	**Yes = 1; No = 0**
2. **Are the main outcomes to be measured clearly described in the introduction or methods section?** If the main outcomes are first mentioned in the Results section, the question should be answered no.	**Yes = 1; No = 0**
3. **Are the characteristics of the patients included in the study clearly described?** In cohort studies and trials, inclusion and/or exclusion criteria should be reported. In case-control studies, a case-definition and the source for controls should be provided.	**Yes = 1; No = 0**
4. **Are the interventions of interest clearly described?** Treatments and placebo (where relevant) that are to be compared should be clearly described.	**Yes = 1; No = 0**
5. **Are the distributions of principal confounders in each group of patients to be compared clearly described?** A list of principal confounders is provided.	**Yes = 2; Partially = 1; No = 0**

1. Downs SH, Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. J Epidemiol Community Health. 1998;52(6):377-84.

Risk of bias

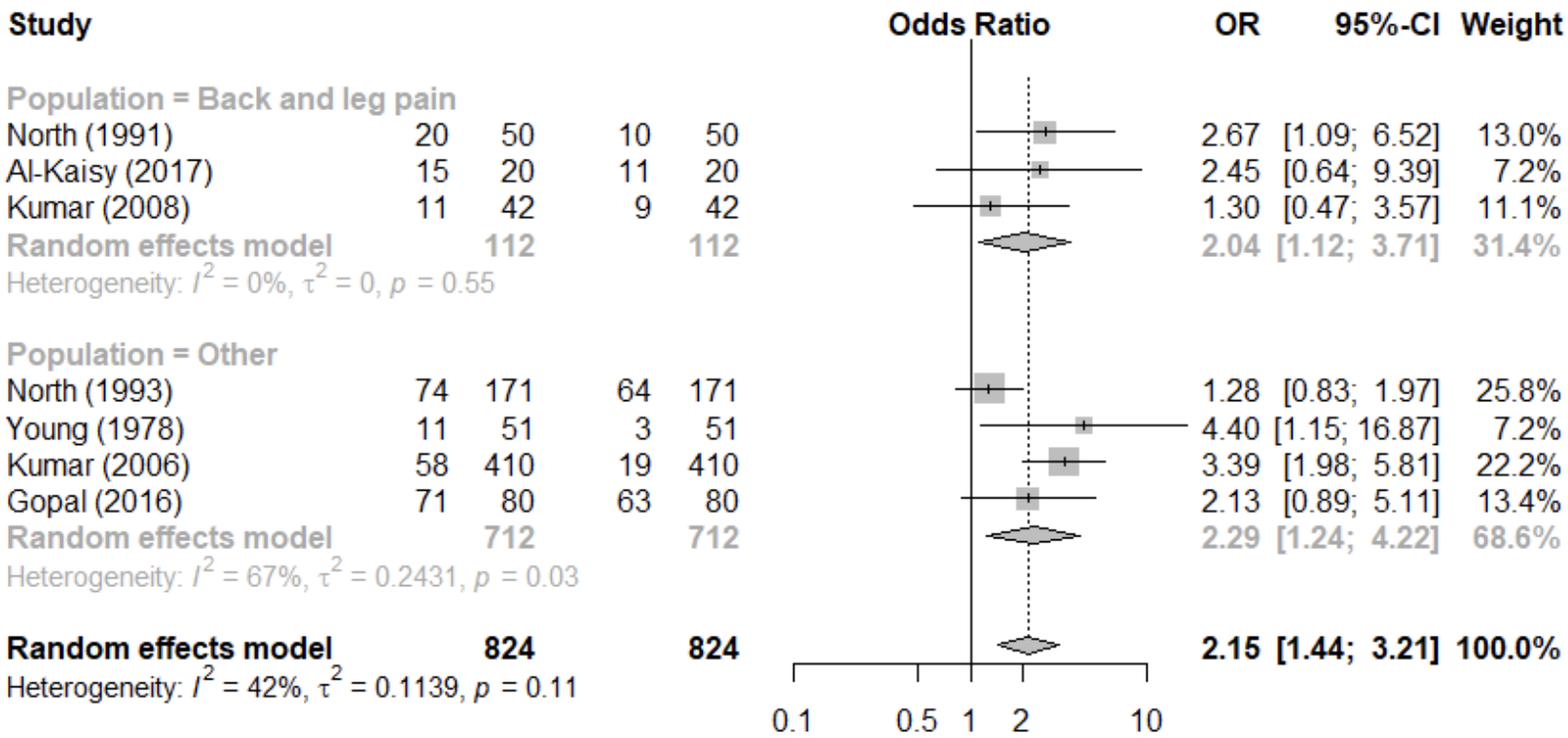
	Reporting									External validity			Internal validity					
	Hypothesis	Main outcomes	Patient characteristics	Interventions	Findings	Estimates of random variability	Adverse events	Characteristics of patients LTFU	Actual probability values	Representativeness of patients asked	Representativeness of included patients	Representativeness of treatment accommodation	Data dredging	Appropriateness of statistics	Compliance with intervention	Outcome measures valid/reliable	Losses of patients taken into account	**Total**
North (1993)	1	1	1	1	1	0	1	1	1	0	0	0	1	1	1	1	1	**13**
Young (1978)	1	0	1	1	1	0	1	1	1	0	0	0	0	0	1	1	1	**10**
Kumar (2006)	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	1	**14**
Harke (2005)	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	**14**
Gopal (2016	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	1	**14**
Al-Kaisy (2017)	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	**14**
Kumar (2008)	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	**16**
North (1991)	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	**15**
Total	**8**	**7**	**8**	**8**	**8**	**4**	**8**	**8**	**8**	**5**	**1**	**0**	**6**	**7**	**8**	**8**	**8**	
LTFU: loss to follow-up																		

Outlier detection

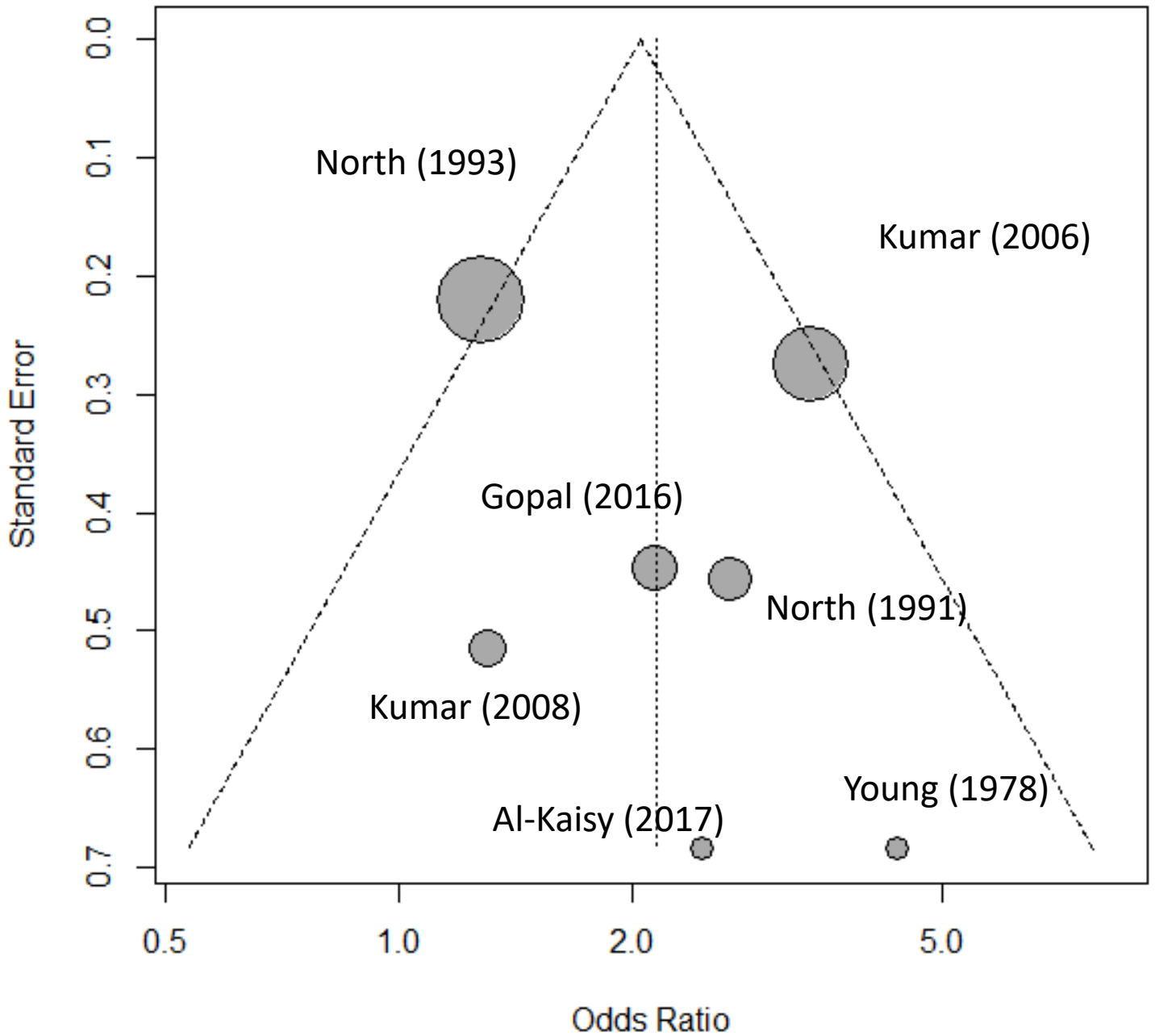


Study (Year)	C	Study Design	N	Female	P	Type SCS	Mean postop sick leave duration	Follow-up intervals	outcome			
									% RTW (No of patients)	PT/FT	Working at baseline	Working after SCS
North (1993)	US	RCS	171	92	Mixed	C	-	mean 7,1 y	15% (24/157)	5/19	64	74
Young (1978)	US	RCS	51	19	Mixed	C	-	3 m, 6 m, 1 y, 2 y, 3 y, 4y, 5y	17% (8/48)	-	3	11
Kumar (2006)	CA	RCS	410	158	Mixed	C	-	mean 97,6 m	10% (39/391)	-	19	58
Gopal (2016)	IE	RCS	80	33	Mixed	C	-	1 m, 12m	47% (8/17)	-	63	71
Al-Kaisy (2017)	GB	PCS	20	9	CLBP	HF10	-	1y	27% (4/15)	2/2	11	15
Kumar (2008)	CA	RCT	42	17	FBSS	C	median unemployment: 2,76 y	1 m, 3 m, 6 m, 9 m, 12 m, 18 m, 24 m	15% (5/33)	-	9	11
North (1991)	US	RCS	50	23	FBSS	C	-	5y	25% (10/40)	4/6	10	20

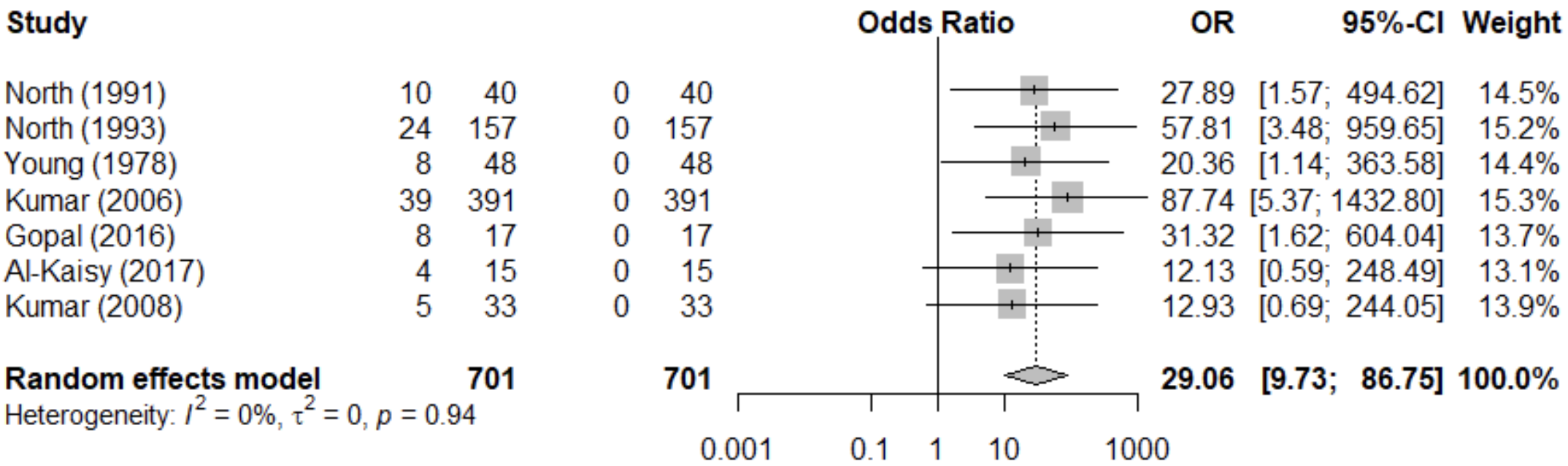
Forest plot RTW



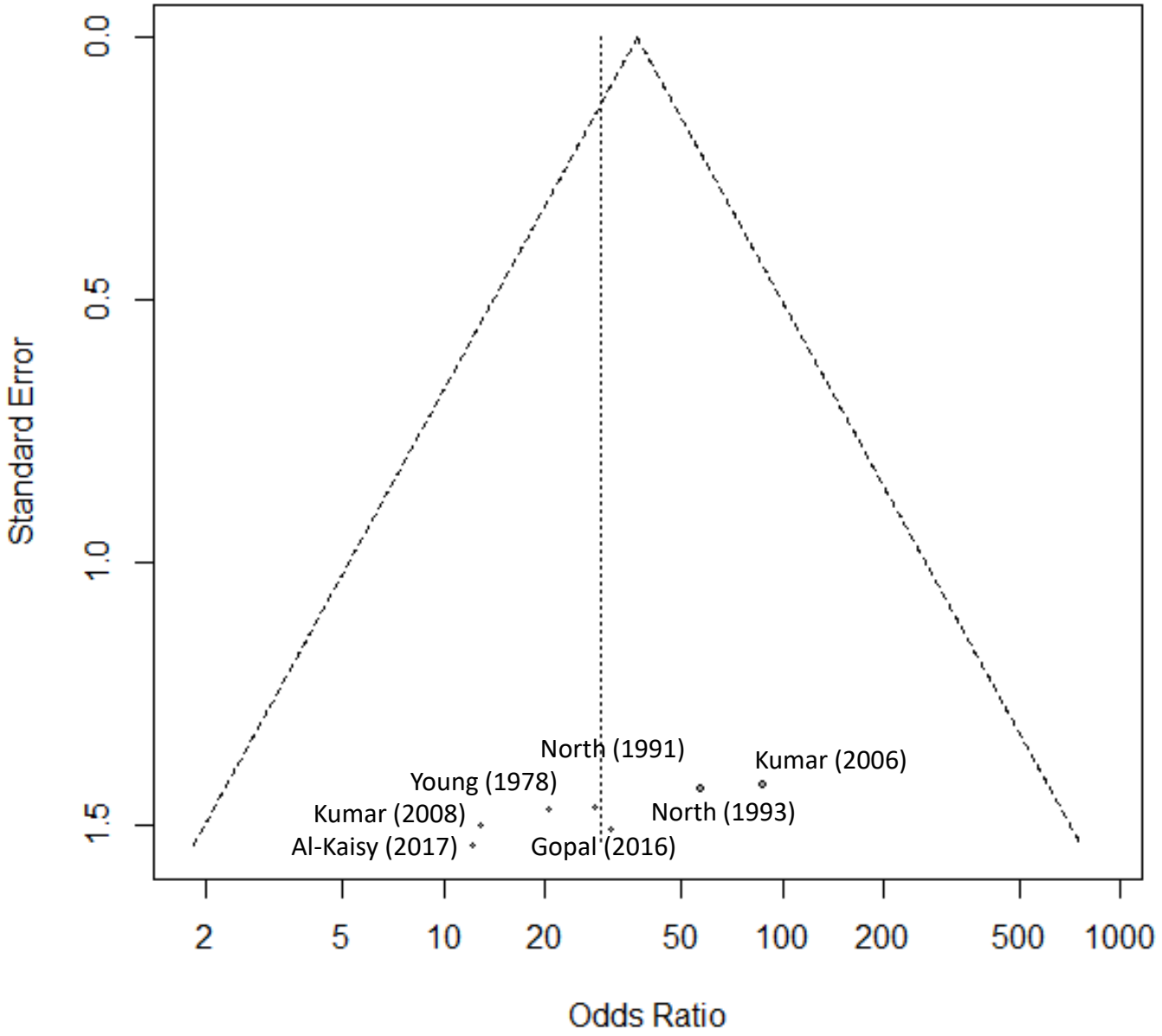
Funnel plot: working status with SCS compared with before treatment



Forest plot: incremental RTW



Funnel plot: return to work due to SCS compared with before treatment



conclusions

- Meta-analysis of 824 patients
- Clinical heterogeneity -> statistical homogeneity
- SCS improves odds of RTW
- 14%RTW

Future studies about global work status & %RTW: increase specificity

- In-dept & detailed analyses
- Clear definitions
- Disjunctive classes of categories
- Adequated time frames

Details on …

- Job description
- Educational level
- Type of employment (full time, part time or casual
- Reasons of unemployment
- Work-related attitudes (e.g. Job satisfaction, work-related expectations)
- Risk factors for chronic disability

thank you