The Optimal Duration of Compression Therapy Following Varicose Vein Surgery:

A Meta-analysis of Randomized Controlled Trials

T.-W. Huang , S.-L. Chen , C.-H. Bai , C.-H. Wu , K.-W. Tam.

林步鴻　2015.04.07

European Journal of Vascular & Endovascular Surgery
esvs Journal

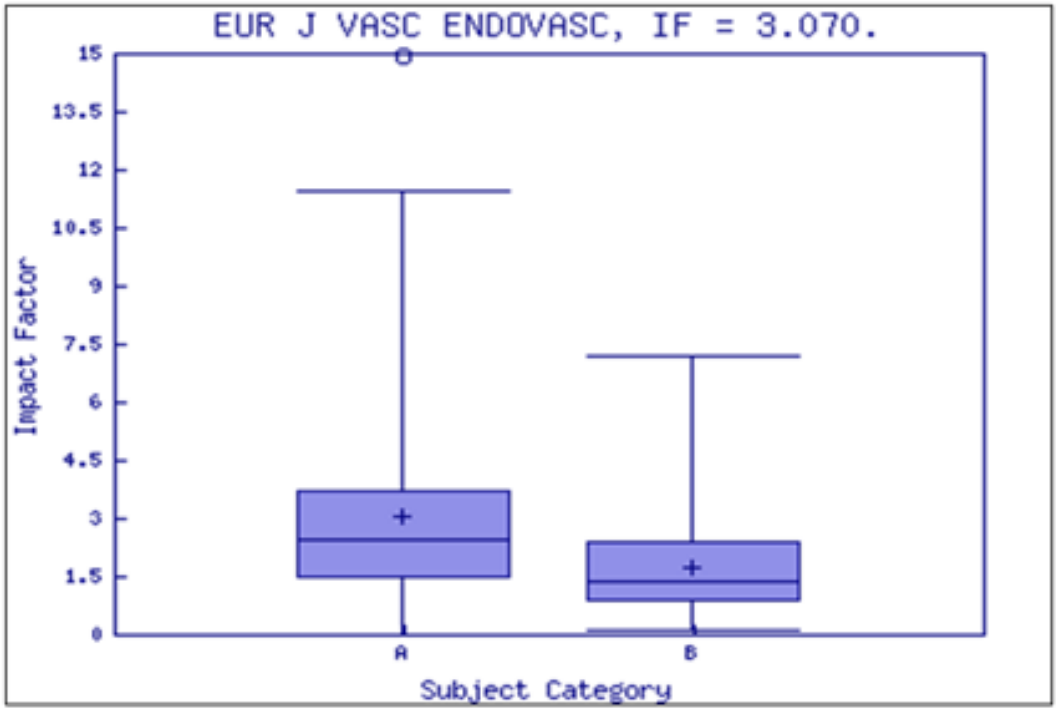
The Optimal Duration of Compression Therapy Following Varicose Surgery: A Meta-analysis of Randomized Controlled Trials CME

T.-W. Huang [a], S.-L. Chen [a], C.-H. Bai [b], C.-H. Wu [c], K.-W. Tam [d,e,f,g,*]

[a] Department of Nursing, College of Medicine and Nursing, HungKuang University, Taichung, Taiwan
[b] School of Public Health, Taipei Medical University, Taipei, Taiwan
[c] Division of General Surgery, Department of Surgery, Taipei Medical University — Shuang Ho Hospital, Taipei, Taiwan
[d] Division of General Surgery, Department of Surgery, Taipei Medical University Hospital, Taipei, Taiwan
[e] Graduate Institute of Clinical Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan
[f] Department of Surgery, School of Medicine, College of Medicine, Taipei Medical University, Taiwan
[g] Center for Evidence-Based Medicine, Taipei Medical University, Taipei, Taiwan

Annals of Internal Medicine

Rank	Abbreviated Journal Title (linked to journal information)	ISSN	JCR Data						Eigenfactor® Metrics	
			Total Cites	Impact Factor	5-Year Impact Factor	Immediacy Index	Articles	Cited Half-life	Eigenfactor® Score	Article Influe Score
1	EUR J VASC ENDOVASC	1078-5884	6624	3.070	2.886	0.621	177	6.2	0.01695	



Key
A - PERIPHERAL VASCULAR DISEASE
B - SURGERY

Introduction

- After GSV stripping or ablation, the prescription of compression stockings to **reduce hemorrhage, hematoma, edema, and pain is standard practice**.
- However, patients frequently report difficulty in **applying the compression stockings and discomfort during warm summer weather.**
- Several randomized controlled trials (RCTs) compared various durations of elastic stocking treatment, and recommended **wearing elastic stockings for 1 week postoperatively.**
- Other reviews and guidelines advised **wearing elastic compression stockings for 1-6 weeks after GSV stripping.**

步驟１：系統性文獻回顧探討的問題為何？

研究族群 / 問題 (Population/ Problem)	varicose vein after surgery
介入措施 (Intervention)	short-duration(3-10d) compression therapy
比較 (Comparison)	long-duration(3-6wks) compression therapy
結果 (Outcomes)	(1)Pain (2)leg volume (3)Complications (4)the duration of absenteeism from work

步驟 2：系統性文獻回顧的品質如何？(FAITH)

F - 研究是否找到 (Find) 所有的相關證據？

最好的狀況是？
良好的文獻搜尋至少應包括二個主要的資料庫(如：Medline, Cochrane考科藍實證醫學資料庫, EMBASE 等)，並且加上文獻引用檢索(參考文獻中相關研究、Web of Science, Scopus或 Google Scholar)、試驗登錄資料等。文獻搜尋應不只限於英文，並且應同時使用 MeSH字串及一般檢索詞彙(text words)。

Search strategy and study selection→P398

Studies were identified using computerized searches of the **PubMed, EMBASE, CINAHL, SCOPUS, Cochrane central register of controlled trials, and ClinicalTrials.gov registry (http://clinicaltrials.gov/) databases. The terms "varicose vein," "ligation or stripping or endovenous ablation or surgery," "duration," and "compression or bandage or stocking"** were used. The related article facility in PubMed was used to broaden the search, and all retrieved abstracts, studies, and citations were reviewed. Hand-searching of the reference lists of relevant systematic reviews and trial registries was also performed. No language restrictions were applied. The final search was performed during November 2012.

評讀結果：v 是 □否 □不清楚

Flowchart of the process used for trial selection.

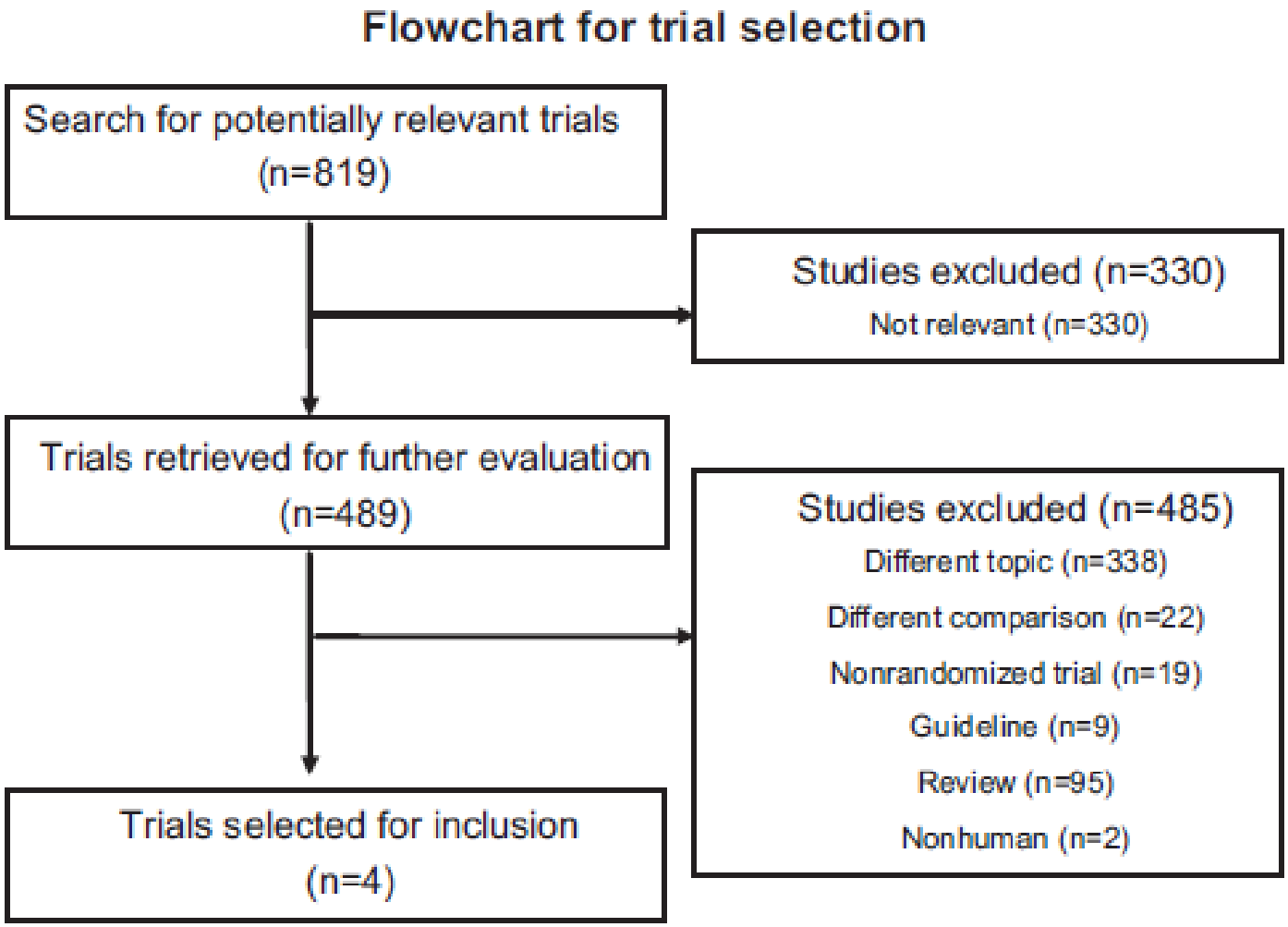


Figure 1. Flowchart of the process used for trial selection.

步驟 2：系統性文獻回顧的品質如何(FAITH)[2]

A - 文獻是否經過嚴格評讀 (Appraisal)？

最好的狀況是？

應根據不同臨床問題的文章類型，選擇適合的評讀工具，並說明每篇研究的品質(如針對治療型的臨床問題，選用隨機分配、盲法、及完整追蹤的研究類型)。

Methodological quality appraisal

The risk of study bias was assessed using the following evidence-based criteria: **method of allocation concealment, randomization technique, double-blinding, and description of withdrawals**. Data on funding sources, as well as reports on **a priori sample size calculations, interim or preliminary analyses, intention-to-treat designs, and reports of surgical sequelae** were also extracted. Two reviewers independently assessed each study. Disagreements were resolved through a consensus with a third party.

評讀結果：v 是 □否 □不清楚

Table 2. Methodological quality assessment of the included trials.

Study [year]	Country	Data analysis	Allocation generation	Allocation concealment	Double blinding	Loss to follow-up
Biswas [2007]	UK	ITT	Sealed envelopes	Unclear	Unclear	26% at 12 weeks
Houtermans-Auckel [2009]	Netherlands	PP	Computer generated	Adequate	Not blinded	7.7% at 4 weeks
Raraty [1999]	UK	Unclear	Unclear	Unclear	Not blinded	Unclear
Rodrigus [1991]	Belgium	PP	Unclear	Unclear	Assessor blinded	5.9% at 6 weeks

PP, per protocol; ITT, intention-to-treat.

步驟 2：系統性文獻回顧的品質如何(FAITH)

I - 是否只納入 (included) 具良好效度的文章？

最好的狀況是？
僅進行文獻判讀是不足夠，系統性文獻回顧只納入至少要有一項研究結果是極小偏誤的試驗。

P399

Table 1. Characteristics of studies fulfilling inclusion criteria in the meta-analysis.

Author [year]	Inclusion criteria	Surgery	No. of patients (leg)	Age (year, mean ± SD)	Intervention
Biswas [2007]	Primary varicose vein surgery for SFJ/GSV reflux	Ligation and stripping of the GSV and multiple phlebectomies	S: 110 L: 110	S: 48 ± 19 L: 47 ± 19.5	S: 3 days elastic bandages + 1 week TED stockings L: 3 days elastic bandages + 3 weeks TED stockings (Kendall TED stockings, Tyoc Healthcare, Hants PO13 0AS)
Houtermans-Auckel [2009]	CEAP stage C2 or C3	Ligation and stripping of the GSV and multiple phlebectomies	S: 52 L: 52	S: 49 ± 11 L: 50 ± 13	S: 3 days elastic bandages L: 3 days elastic bandages + 4 weeks stockings (23—32 mmHg; 2 weeks day and night, 2 weeks day only)
Raraty [1999]	N/A	Saphenous ligation, sequential avulsion of the GSV and multiple stab avulsions	S: 53 (64) L: 52 (67)	S: 49.2 (20—75)† L: 51.5 (16—72)†	S: 1 week elastic bandages L: 16 h crepe bandages + 6 weeks TED stockings (1 week day and night, 5 weeks day only)
Rodrigus [1991]	N/A	Stripping of the GSV and multiple phlebectomies	S: (84) L1: (84) L2: (89)	N/A	S: 1 week elastic bandages L1: 1 week elastic bandages + 2 weeks tubegauze L2: 1 week elastic bandages + 5 weeks tubegauze (Tubigrip; Seton)

Values are presented as mean ± standard deviation, except: as indicated by † mean (range).CEAP, clinical, etiologic, anatomic, and pathophysiologic classification; GSV, great saphenous vein; L, long-duration; S, short-duration; TED, thromboembolus deterrent; N/A, not available.

評讀結果：v 是 □否 □不清楚

步驟 2：系統性文獻回顧的品質如何(FAITH)

T - 作者是否以表格和圖表「總結」(total up) 試驗結果？

最好的狀況是？應該用**至少 1 個摘要表格**呈現所納入的試驗結果。若結果相近，可針對結果進行統合分析(meta-analysis)，並以「森林圖」(forest plot)呈現研究結果，最好再加上異質性分析。

Table 1. Characteristics of studies fulfilling inclusion criteria in the meta-analysis.

Author [year]	Inclusion criteria	Surgery	No. of patients (leg)	Age (year, mean ± SD)	Intervention
Biswas [2007]	Primary varicose vein surgery for SFJ/GSV reflux	Ligation and stripping of the GSV and multiple phlebectomies	S: 110 L: 110	S: 48 ± 19 L: 47 ± 19.5	S: 3 days elastic bandages + 1 week TED stockings L: 3 days elastic bandages + 3 weeks TED stockings (Kendall TED stockings, Tyoc Healthcare, Hants PO13 0AS)
Houtermans-Auckel [2009]	CEAP stage C2 or C3	Ligation and stripping of the GSV and multiple phlebectomies	S: 52 L: 52	S: 49 ± 11 L: 50 ± 13	S: 3 days elastic bandages L: 3 days elastic bandages + 4 weeks stockings (23—32 mmHg; 2 weeks day and night, 2 weeks day only)
Raraty [1999]	N/A	Saphenous ligation, sequential avulsion of the GSV and multiple stab avulsions	S: 53 (64) L: 52 (67)	S: 49.2 (20—75)† L: 51.5 (16—72)†	S: 1 week elastic bandages L: 16 h crepe bandages + 6 weeks TED stockings (1 week day and night, 5 weeks day only)
Rodrigus [1991]	N/A	Stripping of the GSV and multiple phlebectomies	S: (84) L1: (84) L2: (89)	N/A	S: 1 week elastic bandages L1: 1 week elastic bandages + 2 weeks tubegauze L2: 1 week elastic bandages + 5 weeks tubegauze (Tubigrip; Seton)

Values are presented as mean ± standard deviation, except: as indicated by † mean (range).CEAP, clinical, etiologic, anatomic, and pathophysiologic classification; GSV, great saphenous vein; L, long-duration; S, short-duration; TED, thromboembolus deterrent; N/A, not available.

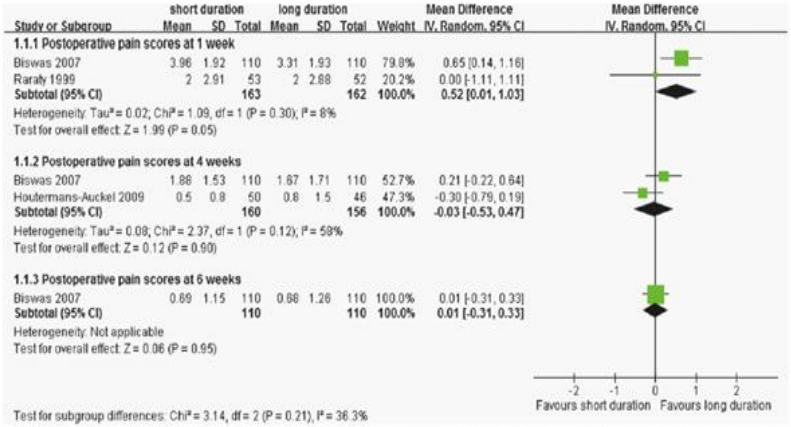


Figure 2. Forest plot of comparison between short-duration and long-duration compression therapy after varicose vein surgery. The outcome was pain score at 1, 4, and 6 weeks postoperatively.

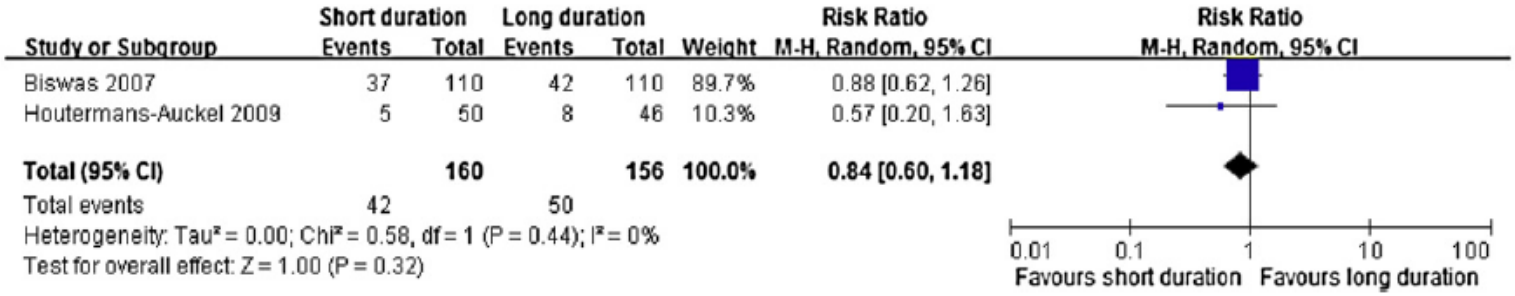


Figure 3. Forest plot of comparison between short-duration and long-duration compression therapy after varicose vein surgery. The outcome was the incidence of complications.

評讀結果：v 是 □否 □不清楚

步驟 2：系統性文獻回顧的品質如何(FAITH)

H - 試驗的結果是否相近 - 異質性 (Heterogeneity) ?

最好的狀況是？

在理想情況下，各個試驗的結果應相近或具同質性，若具有異質性，作者應評估差異是否顯著(卡方檢定)。根據每篇個別研究中不同的PICO及研究方法，探討造成異質性的原因。

P401

Our included studies showed **significant heterogeneity** because of variations in clinical factors and the non-uniform reporting of clinical parameters. First, the **compression protocol** and **types of stockings** differed across the studies. Individual patient characteristics could also have potentially affected the evaluation outcomes.

For example, three of the included studies **did not report the CEAP classification of Patients**. In addition, none of the included trials standardized the practices of multiple surgeons, and differences in the experience levels of surgeons might have contributed to data heterogeneity.

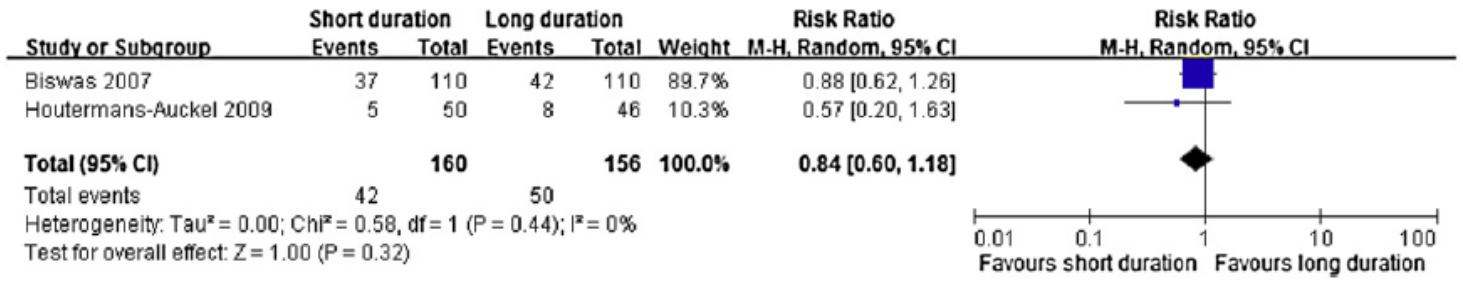


Figure 3. Forest plot of comparison between short-duration and long-duration compression therapy after varicose vein surgery. The outcome was the incidence of complications.

步驟 2：系統性文獻回顧的品質如何(FAITH)

H - 試驗的結果是否相近 - 異質性 (Heterogeneity)？

最好的狀況是？

在理想情況下，各個試驗的結果應相近或具同質性，若具有異質性，作者應評估差異是否顯著(卡方檢定)。根據每篇個別研究中不同的PICO及研究方法，探討造成異質性的原因。

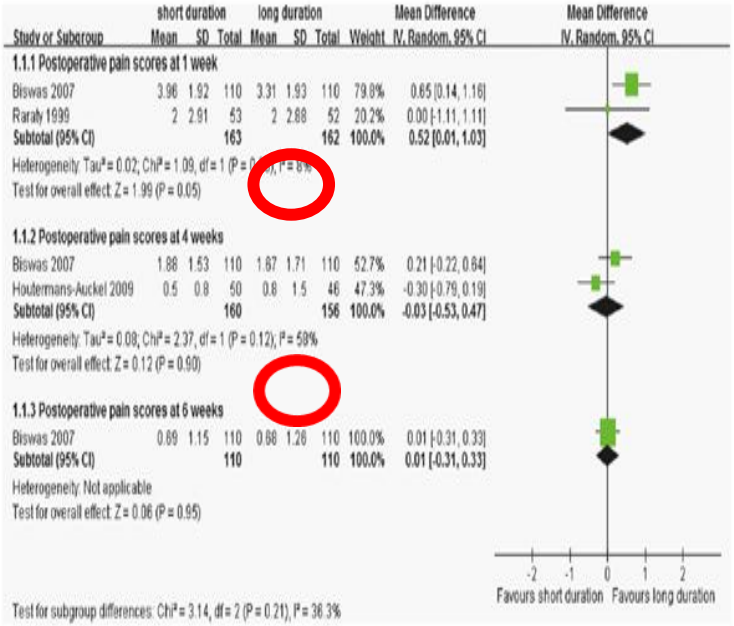


Figure 2. Forest plot of comparison between short-duration and long-duration compression therapy after varicose vein surgery. The outcome was pain score at 1, 4, and 6 weeks postoperatively.

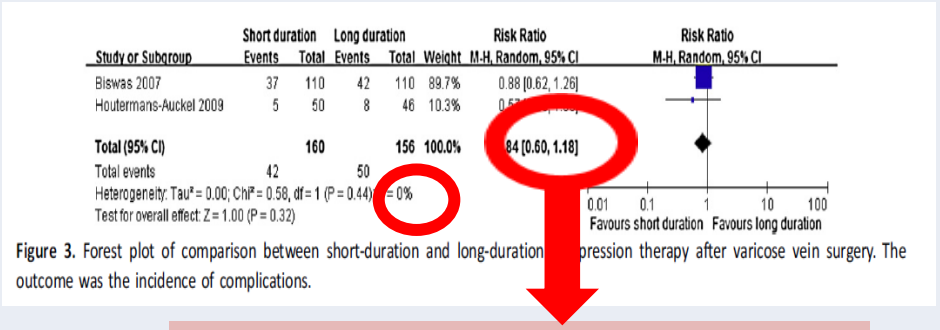


Figure 3. Forest plot of comparison between short-duration and long-duration pression therapy after varicose vein surgery. The outcome was the incidence of complications.

RR of 0.84 (95% CI: 0.60-1.18)

評讀結果： v是 □否 □不清楚

系統性文獻回顧的品質

Level I

F - 研究是否找到 (Find) 所有的相關證據？	Yes
A - 文獻是否經過嚴格評讀 (Appraisal)？	Yes
I - 是否只納入 (included) 具良好效度的文章？	Yes
T - 作者是否以表格和圖表「總結」 (total up) 試驗結果？	Yes
H - 試驗的結果是否相近 - 異質性 (Heterogeneity)？	Yes

Results--Pain score

P399

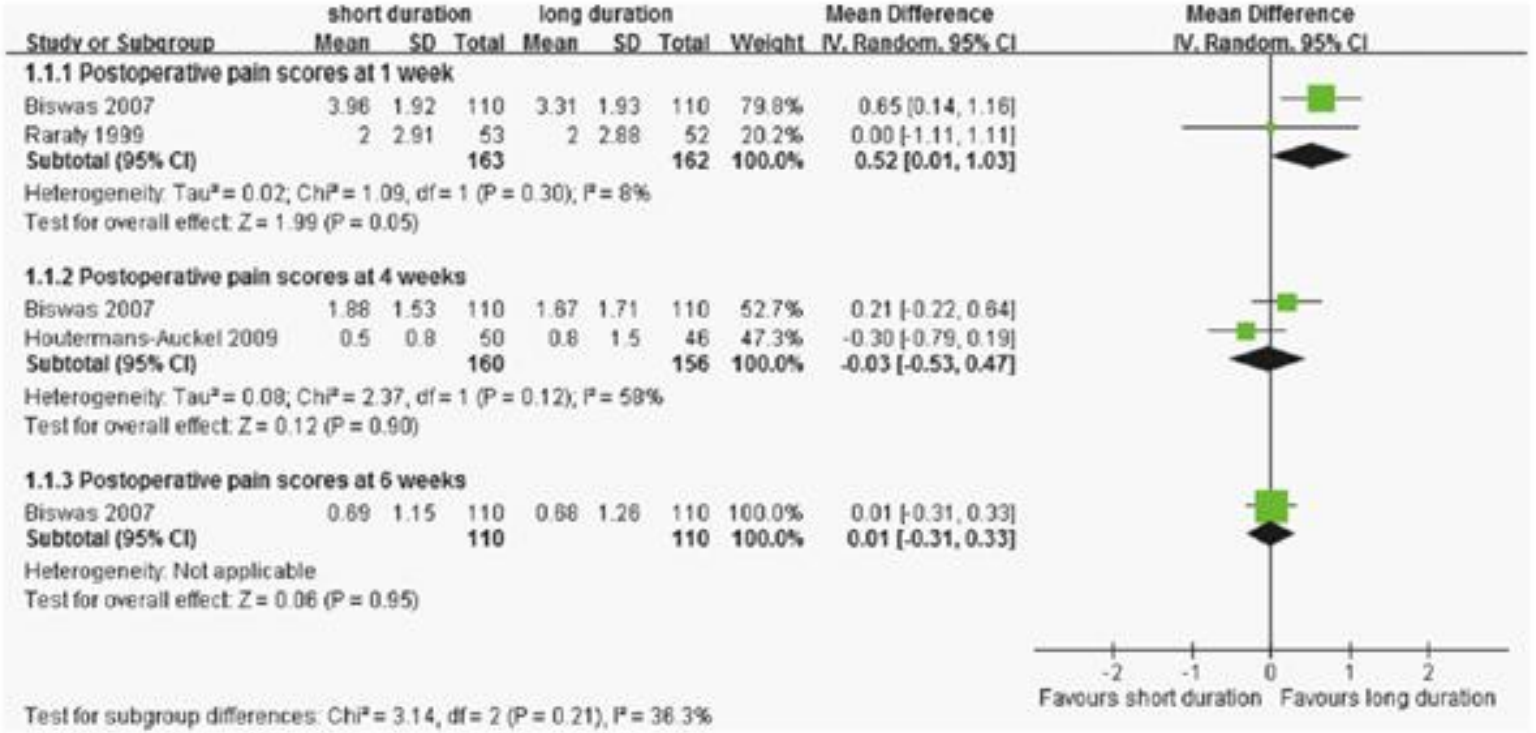


Figure 2. Forest plot of comparison between short-duration and long-duration compression therapy after varicose vein surgery. The outcome was pain score at 1, 4, and 6 weeks postoperatively.

Results--Complications

P399

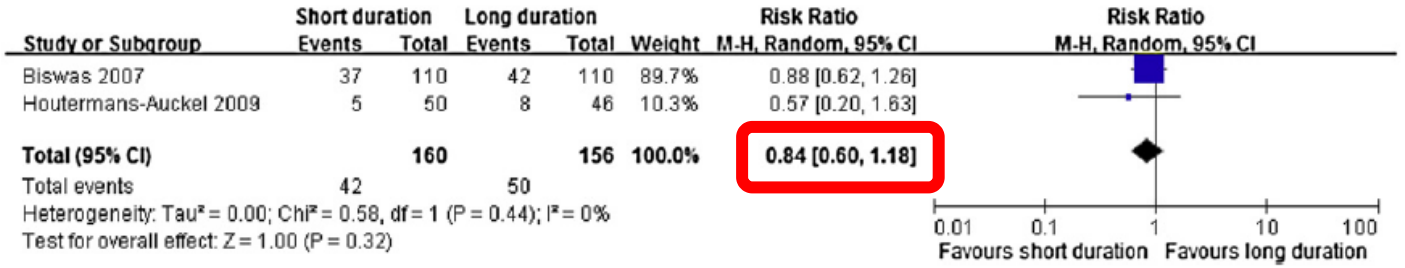


Figure 3. Forest plot of comparison between short-duration and long-duration compression therapy after varicose vein surgery. The outcome was the incidence of complications.

Results--Leg volume

P399

- The differences in changes in leg volume between the long-duration and short-duration groups were **non-significant** (P =.18) 4 weeks postoperatively.

Results--Absenteeism from work

P400

Three trials evaluated the mean durations of absenteeism from work as outcome measures. In one trial, at any evaluation time point (less than 2 weeks, 2-6 weeks, and 6-12 weeks), the groups showed **non-significant differences**.

Another study showed that patients in the short-duration group were absent from work for a median of 18 (range, 5-54) days, and that those in the long-duration group were absent from work for a median of 20 (range, 1-51) days; therefore, the two groups showed **non-significant differences.**

However, in one trial, the short-duration group had a shorter duration of absenteeism from work (11 d on average, SD 7.5) than the long-duration group (15 d, SD 8.4;P = .02).15

Conclusion

- This study results indicate that there are no bene fits to long-term compression therapy after varicose vein surgery of the GSV regarding postoperative pain, leg volume, incidence of complications, and duration of absenteeism from work.

探討

- 靜脈曲張手術後是否衛教病人穿彈性襪的時間為3-7天?

謝謝聆聽　敬請指教