

三軍總醫院院內107年度第三次 實證醫學(EBM)競賽

參賽單位：牙科部

參加人員：邱雋媛醫師. 孔令瑜醫師. 徐千恬醫師

成員介紹

孔令瑜醫師



邱雋媛醫師



徐千恬醫師



CLINICAL SCENARIO

臨床情境

- 72歲的盧媽媽幾年前開始感到膝關節不適，經醫師確診骨關節炎(osteoarthritis)，平常有吃維骨力(glucosamine)也打過玻尿酸鈉(Sodium hyaluronate)，經醫師建議接受左側全膝關節置換術(total knee arthroplasty, TKA)。
- 手術非常順利，術後住院期間依醫囑每天需執行兩次連續被動性運動(Continue Passive Motion, CPM)
- 患者女兒擔心：昨天才剛手術，傷口這麼大還很痛真的需要現在就做嗎？等恢復好一點回家再開始做可以嗎？
- 患者術後一直很痛且年紀大，怕止痛藥傷身體可以用電針(electro-acupuncture)或生理回饋(Biofeedback)等方法來止痛嗎？
- 患者女兒非常關心媽媽術後照顧及復健詢問：需不需要租一台關節活動機器(CPM)回家做運動？
- 患者問說：我之前有吃維骨力要繼續吃嗎？還可以吃什麼保養關節？

PATIENT' S CONCERNS

- 1. 術後疼痛的情況下，是否需要立即開始CPM？
- 2. 是否可以其他方式（如電針及生理回饋）代替止痛藥來做術後的疼痛控制？
- 3. 出院後是否需要持續利用儀器進行CPM？

PICO 1

| PICO | | Keyword |
|-----------------|---|---|
| Patient/Problem | 72 y/o female who is diagnosed osteoarthritis s/p total knee arthroplasty | Osteoarthritis /Arthritis Total knee arthroplasty |
| Intervention | Continuous passive motion | Continuous passive motion |
| Comparison | w/o continuous passive motion | |
| Outcome | Function recovery | Range of motion |

PICO 2

| | | |
|-----------------|---|---|
| PICO | | Keyword |
| Patient/Problem | 72 y/o female who is diagnosed osteoarthritis s/p total knee arthroplasty | Osteoarthritis / Arthritis Total knee arthroplasty |
| Intervention | Electro acupuncture | Electro acupuncture |
| Comparison | Analgesics | Analgesics |
| Outcome | Pain relief | Pain relief |

Step2. Acquire

Track down the best evidence

尋找最佳的實證文獻（各種文獻資料庫包含已發表或未發表）

The screenshot shows the Cochrane Library search interface. At the top, the Cochrane Library logo and tagline 'Trusted evidence. Informed decisions. Better health.' are visible. The search bar contains the query 'Osteoarthritis, total knee arthroplasty, continuous passive motion'. Below the search bar, a navigation menu shows 'Cochrane Reviews' with a count of 1, and other categories like 'Cochrane Protocols', 'Trials', 'Editorials', 'Special collections', and 'Clinical Answers' with counts of 0. The search results are displayed in a list format, with the first result highlighted: 'Continuous passive motion following total knee arthroplasty in people with arthritis' by Lisa A Harvey, Lucie Brosseau, and Robert D Herbert, published on 6 February 2014. The result is marked as 'Free access'. On the left side, there are filter options for 'Date' and 'Language', with 'Deutsch' selected under 'Language'.

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English Cochrane.org Sign In

Title Abstract Keyword Osteoarthritis, total knee arthroplasty, continuous passive motion

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Osteoarthritis, total knee arthroplasty, continuous passive motion

Cochrane Reviews 1 Cochrane Protocols 0 Trials 27 Editorials 0 Special collections 0 Clinical Answers 0 More

1 Cochrane Review matching on 'Osteoarthritis, total knee arthroplasty and continuous passive motion in Title Abstract Keyword'
Did you mean: *osteo-arthritis ostarthritis osteoarthritic*

Cochrane Database of Systematic Reviews
Issue 8 of 12, August 2018

Select all (1) Export selected citation(s) Show all previews

Order by Relevancy Results per page 25

1 **Continuous passive motion following total knee arthroplasty in people with arthritis**
Lisa A Harvey, Lucie Brosseau, Robert D Herbert
[Show Preview](#) Intervention Review 6 February 2014 Free access

Filter your results

Date

Publication date

The last 3 months 0

The last 6 months 0

The last 9 months 0

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Language

Deutsch 1



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Year



Year first published

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2017

2016

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2014

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2013

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Date added to CENTRAL trials database

The last 3 months



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1

Cochrane Protocols
0

Trials
27

Editorials
0

Special collections
0

Clinical Answers
0

More
▾

Year: Custom year range ✕

5 Trials matching on 'Osteoarthritis, total knee arthroplasty and continuous passive motion in Title Abstract Keyword'

Did you mean: *osteo-arthritis osteoarthritis osteoarthritic*

Cochrane Central Register of Controlled Trials

Issue 7 of 12, July 2018

Select all (5) Export selected citation(s)

Order by Relevancy ▾

Results per page 25 ▾

1 **Randomized controlled trial of the effectiveness of continuous passive motion after total knee replacement**

JA Herbold, K Bonistall, M Blackburn, J Agolli, S Gaston, C Gross, A Kuta, S Babyar

Archives of physical medicine and rehabilitation, **2014**, 95(7), 1240-1245 | added to CENTRAL: 31 August 2014
| 2014 Issue 8

[PubMed](#) | [Embase](#)

2 **Biofeedback relaxation for pain associated with continuous passive motion in Taiwanese patients after total knee arthroplasty**

TJ Wang, CF Chang, MF Lou, MK Ao, CC Liu, SY Liang, SF Wu, HH Tung

PubMed Search

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Help

Article types
Clinical Trial
Review
Customize ...

Format: Summary Sort by: Most Recent Per page: 20

Send to Filters: Manage Filters

Text availability
Abstract
Free full text
Full text

Search results

Items: 1 to 20 of 26

<< First < Prev Page 1 of 2 Next > Last >>

Sort by:
Best match Most recent

Filters activated: published in the last 5 years. Clear all to show 82 items.

- [Gait Abnormality Predicts Falls in Women After Total Hip Arthroplasty.](#)
1. Ikutomo H, Nagai K, Tagomori K, Miura N, Nakagawa N, Masuhara K.
J Arthroplasty. 2018 Jun 6. pii: S0883-5403(18)30528-X. doi: 10.1016/j.arth.2018.05.044. [Epub ahead of print]
PMID: 29941382
[Similar articles](#)
- [\[Clinical study of a new wearable device for rehabilitation after total knee arthroplasty\].](#)
2. Kang K, Geng Q, Xu HT, Zheng XZ, Dong JT, Li T, Zhao ZG, Gao SJ.
Zhonghua Yi Xue Za Zhi. 2018 Apr 17;98(15):1162-1165. doi: 10.3760/cma.j.issn.0376-2491.2018.15.008. Chinese.
PMID: 29690729
[Similar articles](#)
- [Improved early outcome after TKA through an app-based active muscle training programme-a randomized-controlled trial.](#)
3. Hardt S, Schulz MRG, Pfitzner T, Wassilew G, Horstmann H, Liodakis E, Weber-Spickschen TS.
Knee Surg Sports Traumatol Arthrosc. 2018 Mar 27. doi: 10.1007/s00167-018-4918-2. [Epub ahead of print]
PMID: 29589050
[Similar articles](#)
- [Rehabilitation Outcomes for Total Knee Arthroplasties: Continuous Adductor Canal Block Versus Continuous Femoral Nerve Block.](#)
4. Brennan PT, Villa JM, Rossi MD, Sanchez-Gonzalez MA, Lavernia CJ.

Find related data

Database: Select

Find items

Search details

((("osteoarthritis" [MeSH Terms]
OR "osteoarthritis" [All Fields]) AND
("arthroplasty,

Search

See more...

Recent Activity

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- Osteoarthritis, total knee arthroplasty, continuous passive motio... (26) PubMed

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1

會議論文
0

碩博士論文
0

電子書
0

紙本書
27

依下方條件來精確結果

查詢 (Osteoarthritis, total knee arthroplasty, continuous passive motion) = 所有欄位

年代: 2013年以後

來源資料庫

CJTD中國大陸期刊 (1)

篇名.關鍵字.摘要

作者

刊名

起始年

結束年

檢索結果再查詢

學科分類

每頁 10 筆

共 1 筆, 1 - 1 筆

醫藥衛生 (1)

年代

清除條件

共 1 頁

2013年以後 (1)



書目匯出

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出版品名稱



1 CPM 机在全膝关节表面置换术后康复训练中应用最佳时间的研究

陈苗 ; 皖南医学院弋矶山医院 ; 皖南医学院弋矶山医院,安徽芜湖,241001 ; Chen Miao

护士进修杂志 2015年 21期 (2015/01), 1931-1933

持续被动活动 ; 全膝关节表面置换术 ; 康复训练 ; 膝骨性关节炎 ; 护理 ; 论著 ; Continuous passive motion machine ; Total knee arthroplasty ; Rehabilitation training ; Knee osteoarthritis Nursing

預覽摘要

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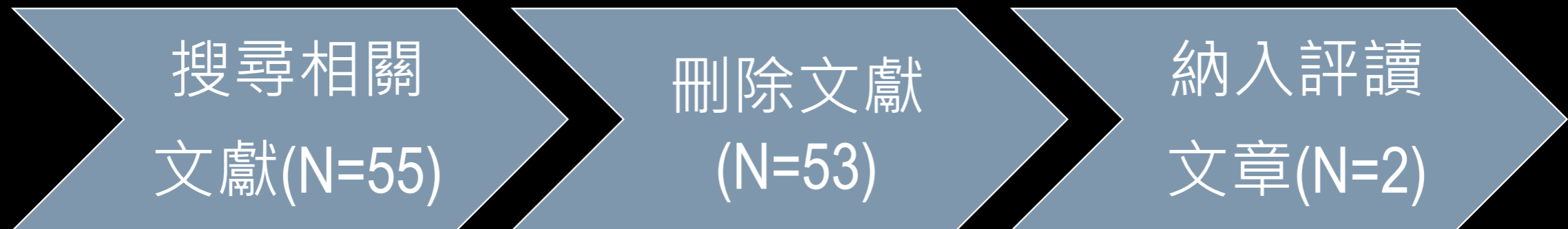
全文下載

CSTPCD(1)

SEARCH DATA BASE

| 資料庫 | 搜尋篇數 | 符合PICO篇數 |
|---|------|----------|
|  | 28 | 2 |
|  US National Library of Medicine National Institutes of Health | 26 | 0 |
|  | 1 | 0 |

SEARCH DATA BASE



- 非RCT or SR文章
- 與本報告PICO不一致

Oxford
Centre for
EBM 2011
Levels of
evidence

符合情境

[Intervention Review]

Continuous passive motion following total knee arthroplasty in people with arthritis

Lisa A Harvey¹, Lucie Brosseau², Robert D Herbert³

Citation: Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. *Cochrane Database of Systematic Reviews* 2014, Issue 2. Art. No.: CD004260. DOI: 10.1002/14651858.CD004260.pub3.

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Level 1

V



ELSEVIER

Archives of Physical Medicine and
Rehabilitation

Volume 95, Issue 7, July 2014, Pages 1240-1245



Original article




Randomized Controlled Trial of the Effectiveness
of Continuous Passive Motion After Total Knee
Replacement

Level 2

X

Step3. Appraisal



-  www.casp-uk.net
-  info@casp-uk.net
-  Summertown Pavilion, Middle Way Oxford OX2 7LG

CASP Checklist: 10 questions to help you make sense of a **Systematic Review**

1. DID THE REVIEW ADDRESS A CLEARLY FOCUSED QUESTION?

Types of participants

Participants could be of any age provided they were hospitalised following TKA. All participants needed to have a pre-surgery diagnosis of arthritis.

Types of interventions

We included trials if CPM and standard postoperative care were compared with similar postoperative care with or without additional knee exercises. Standard postoperative care could include muscle-strengthening exercises (isometric or dynamic), functional exercises, gait training, immobilisation or ice, provided both groups received the same intervention. Additional knee exercises could include instructions or supervised active or passive knee ROM exercises. They could not include knee exercises provided with any type of CPM device.

Types of outcome measures

Major outcomes

The primary outcomes of interest were active knee flexion ROM, pain, function, quality of life, participants' global assessment of treatment effectiveness, need for manipulation under anaesthesia and adverse events. If study authors did not distinguish between active and passive knee flexion ROM then it was assumed that the measurement was passive. Only direct measures of pain intensity were of interest. These included pain scales but not pain medication. These outcomes are presented in [Summary of findings for the main comparison](#).

2. DID THE AUTHORS LOOK FOR THE RIGHT TYPE OF PAPERS?

Types of studies

We included only randomised controlled trials (RCT), regardless of language. We accepted abstracts. We did not exclude trials based on quality assessment.

Types of interventions

We included trials if CPM and standard postoperative care were compared with similar postoperative care with or without additional knee exercises. Standard postoperative care could include muscle-strengthening exercises (isometric or dynamic), functional exercises, gait training, immobilisation or ice, provided both groups received the same intervention. Additional knee exercises could include instructions or supervised active or passive knee ROM exercises. They could not include knee exercises provided with any type of CPM device.

3. DO YOU THINK ALL THE IMPORTANT, RELEVANT STUDIES WERE INCLUDED?

Electronic searches

We searched the following databases:

- the Cochrane Central Register of Controlled Trials (CENTRAL) (2012, Issue 12);
- MEDLINE (January 1966 to January 24, 2013);
- EMBASE (January 1980 to January 24, 2013);
- CINAHL (January 1982 to January 24, 2013);
- AMED (January 1985 to January 24, 2013);
- PEDro (to January 24, 2013).

We applied no language restrictions. The database details and results of all the searches are recorded in [Appendix 1](#); [Appendix 2](#); [Appendix 3](#); [Appendix 4](#); [Appendix 5](#); and [Appendix 6](#).

Searching other resources

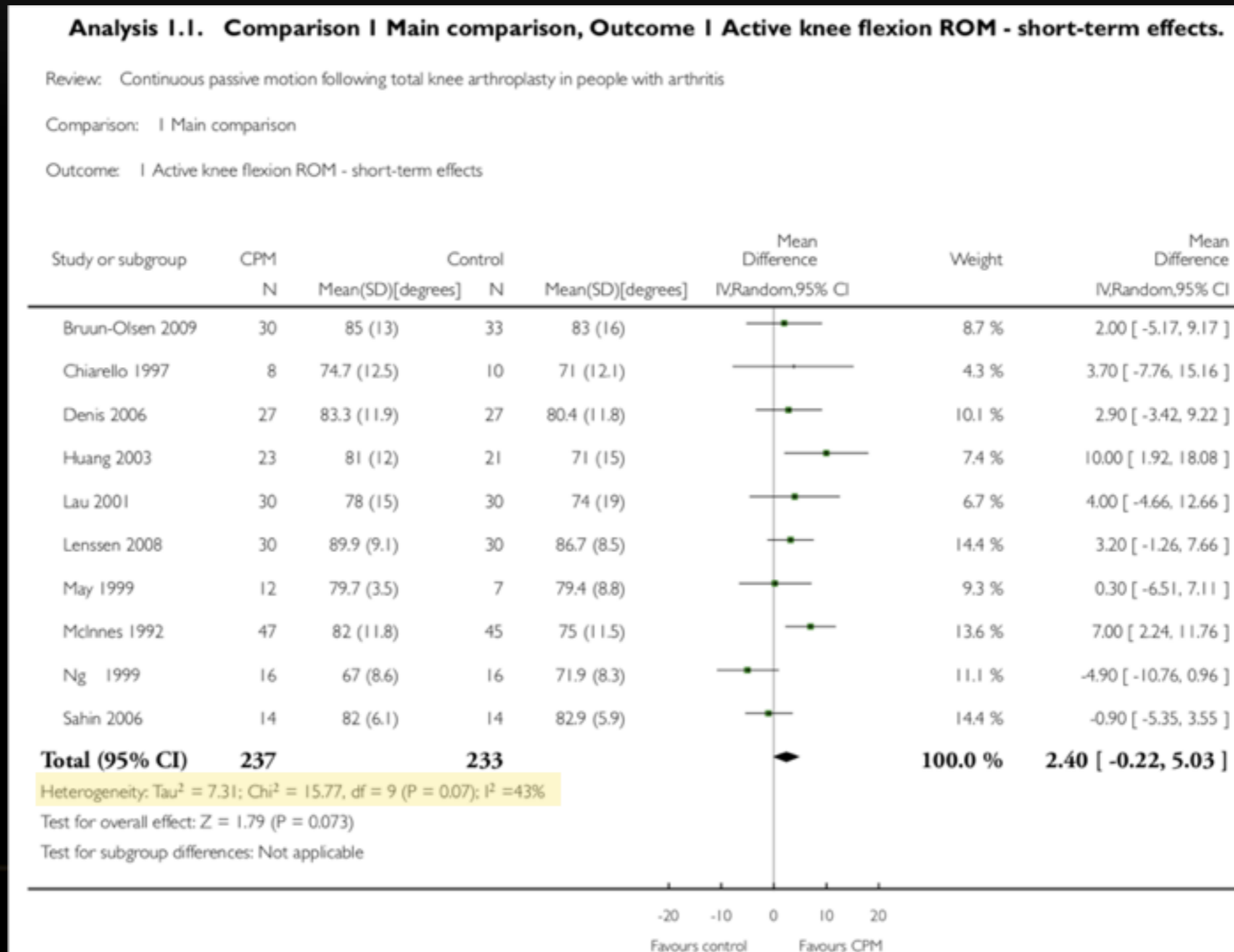
We checked the reference lists of all included trials for other potentially relevant trials.

4. DID THE REVIEW'S AUTHORS DO ENOUGH TO ASSESS QUALITY OF THE INCLUDED STUDIES?

Figure 2. Methodological quality summary: review authors' judgements about each methodological quality item for each included trial.

| Trial | Random sequence generation (selection bias) | Allocation concealment (selection bias) | Incomplete outcome data (attrition bias) | Selective reporting (reporting bias) | Other bias | Participant blinding? | Personnel blinding? | Outcome assessor blinding? |
|------------------|---|---|--|--------------------------------------|------------|-----------------------|---------------------|----------------------------|
| Alkire 2010 | + | ? | + | + | + | - | - | ? |
| Bennett 2005 | + | + | + | - | + | - | - | + |
| Bruun-Olsen 2009 | - | + | + | + | ? | - | - | + |
| Can 1995 | ? | ? | - | ? | ? | - | - | ? |
| Chiarello 1997 | + | - | + | + | + | - | - | - |
| Colwell 1992 | ? | ? | + | - | + | - | - | ? |
| Denis 2006 | ? | + | + | + | + | - | - | + |
| Harms 1991 | ? | ? | ? | - | + | - | - | ? |
| Huang 2003 | ? | ? | ? | - | ? | - | - | - |
| Kumar 1996 | + | ? | - | - | + | - | - | ? |
| Lau 2001 | ? | ? | + | - | - | - | - | ? |
| Lenssen 2003a | + | + | + | + | + | - | - | + |
| Lenssen 2008 | + | + | + | - | + | - | - | + |
| MacDonald 2000 | + | + | ? | - | + | - | - | + |
| Maniar 2012 | - | + | ? | + | - | - | - | ? |
| May 1999 | ? | + | + | - | + | - | - | + |
| McInnes 1992 | ? | ? | + | - | + | - | - | + |
| Montgomery 1996 | ? | ? | + | ? | + | - | - | ? |
| Ng 1999 | ? | ? | + | + | + | - | - | ? |
| Nielsen 1988 | ? | ? | + | - | + | - | - | + |
| Ritter 1989 | + | ? | + | - | + | - | - | ? |
| Sahin 2006 | - | ? | + | + | ? | - | - | ? |
| Vince 1987 | ? | ? | ? | - | - | - | - | ? |
| Worland 1998 | ? | ? | ? | - | + | - | - | + |

5. IF THE RESULTS OF THE REVIEW HAVE BEEN COMBINED, WAS IT REASONABLE TO DO SO?



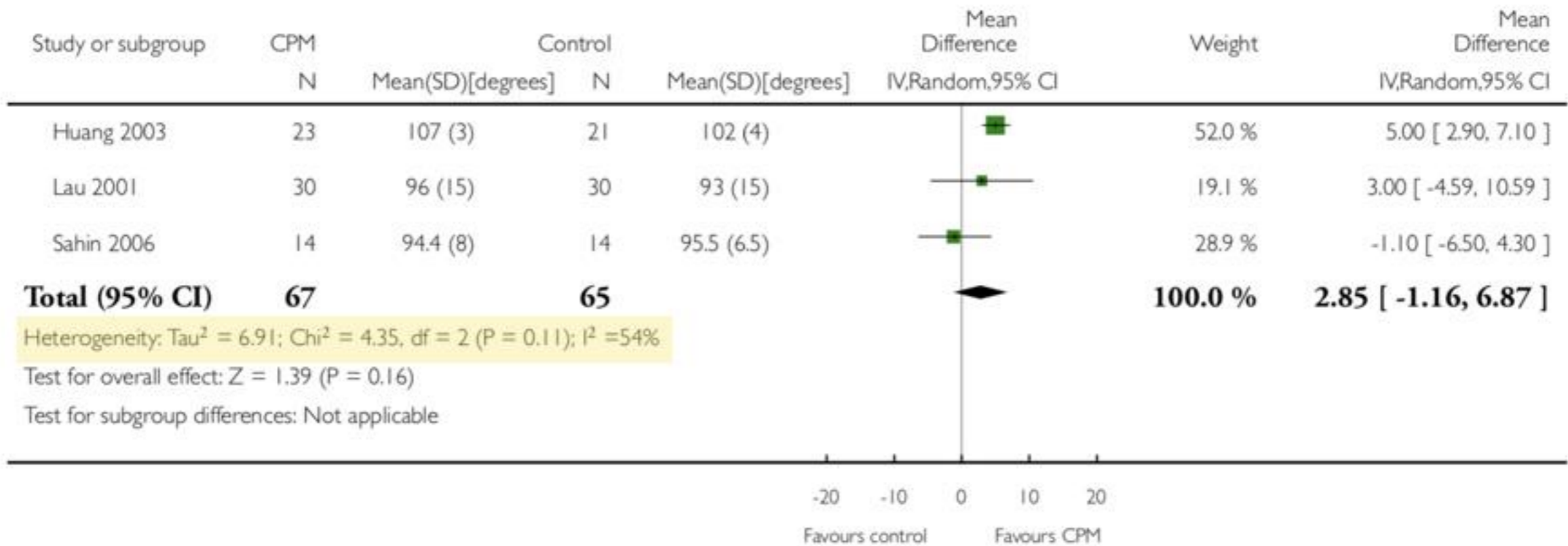
5. IF THE RESULTS OF THE REVIEW HAVE BEEN COMBINED, WAS IT REASONABLE TO DO SO?

Analysis 1.3. Comparison 1 Main comparison, Outcome 3 Active knee flexion ROM - long-term effects.

Review: Continuous passive motion following total knee arthroplasty in people with arthritis

Comparison: 1 Main comparison

Outcome: 3 Active knee flexion ROM - long-term effects



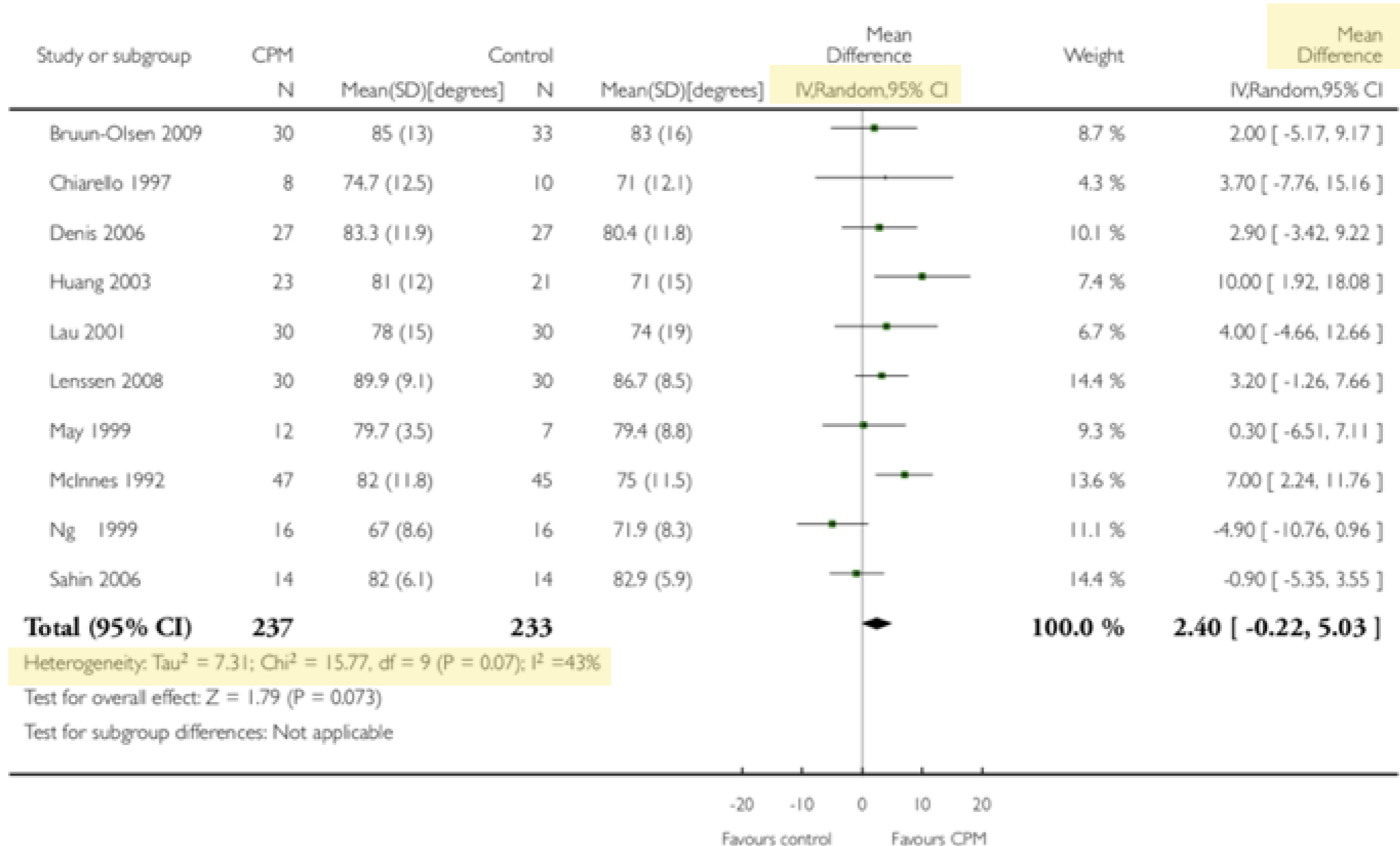
6. WHAT ARE THE OVERALL RESULTS OF THE REVIEW?

Analysis 1.1. Comparison 1 Main comparison, Outcome 1 Active knee flexion ROM - short-term effects.

Review: Continuous passive motion following total knee arthroplasty in people with arthritis

Comparison: 1 Main comparison

Outcome: 1 Active knee flexion ROM - short-term effects



7. HOW PRECISE ARE THE RESULTS?

Primary comparison for continuous passive motion (CPM) versus no CPM

Patient or population: hospitalised patients who have undergone knee replacement surgery

Settings: hospital

Intervention: Continuous passive motion (CPM) versus no CPM

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | No of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|--------------------------|------------------------------|--------------------------------------|---|
| | Assumed risk | Corresponding risk | | | | |
| | Control | Primary comparison | | | | |
| Active knee flexion ROM Goniometer. Scale: 0 to 130 Follow-up: 6 weeks | The mean active knee flexion ROM in the control groups was 78 degrees | The mean active knee flexion ROM in the intervention groups was 2 higher (0 to 5 higher) | - | 470 (10 studies) | ⊕⊕⊕○ moderate ¹ | Absolute risk difference 2% (0 to 4); relative percent change 0% (2 to 5); not statistically significant 2 |

8. CAN THE RESULTS BE APPLIED TO THE LOCAL POPULATION?

Types of participants

Participants could be of any age provided they were hospitalised following TKA. All participants needed to have a pre-surgery diagnosis of arthritis.

9. WERE ALL IMPORTANT OUTCOMES CONSIDERED?

Major outcomes

The primary outcomes of interest were active knee flexion ROM, pain, function, quality of life, participants' global assessment of treatment effectiveness, need for manipulation under anaesthesia and adverse events. If study authors did not distinguish between

All results, except need for manipulation and adverse events, were categorised into short-term effects of CPM (reflected in outcomes taken less than six weeks after randomisation), medium-term effects of CPM (reflected in outcomes taken six weeks to six months after randomisation) and long-term effects of CPM (reflected in outcomes taken more than six months after randomisation).

10. ARE THE BENEFITS WORTH THE HARMS AND COSTS?

activities of daily living for many cultures ([Hemmerich 2006](#)). In interpreting the results of this review, it is important to consider how much additional knee flexion ROM is required to justify the use of CPM. Few people would claim that an added benefit of less than 5 degrees is functionally important, and most people would probably agree that considerably more than 5 degrees is required to justify the added time, cost and inconvenience of CPM. This

CPM租賃費用-平均每日約500元(至少10天) (建議售價150,000)

| | | | | |
|---|-----------|---|----------|-----------|
| 醫療輔具 / 復健器材 租賃品項 | | 富順醫療器材 25286568、25131996 楊岳穎 0935-425511 | | 04- 專員 |
| ◆B:【復健器材】租賃系列…一次承租3期(3個月),承租金額*80% | | | | |
| 膝關節連續被動運動訓練器 CPM | 4500元/10天 | 500 | ■每10天為一期 | |

膝關節被動運動機CPM-租賃



內容介紹Introduction

| | |
|------|---|
| 商品類別 | 出租區/二手商品 - 復健運動健身器材 |
| 商品編號 | 膝關節運動機-租賃 |
| 商品規格 | (普)月租金enpo015-000/月 |
| 商品材質 | 法國 Kinetic (es0170-000) 型號 : Prima Advance 租賃/月租:15000 |
| | ☎ 02-2600-0149 |

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個人醫療輔具(動作、肌力與平衡訓練設備)

產品名稱 “史塔鐵克”連續式被動關節活動器(未滅菌)-人工膝關節復健機 CPM

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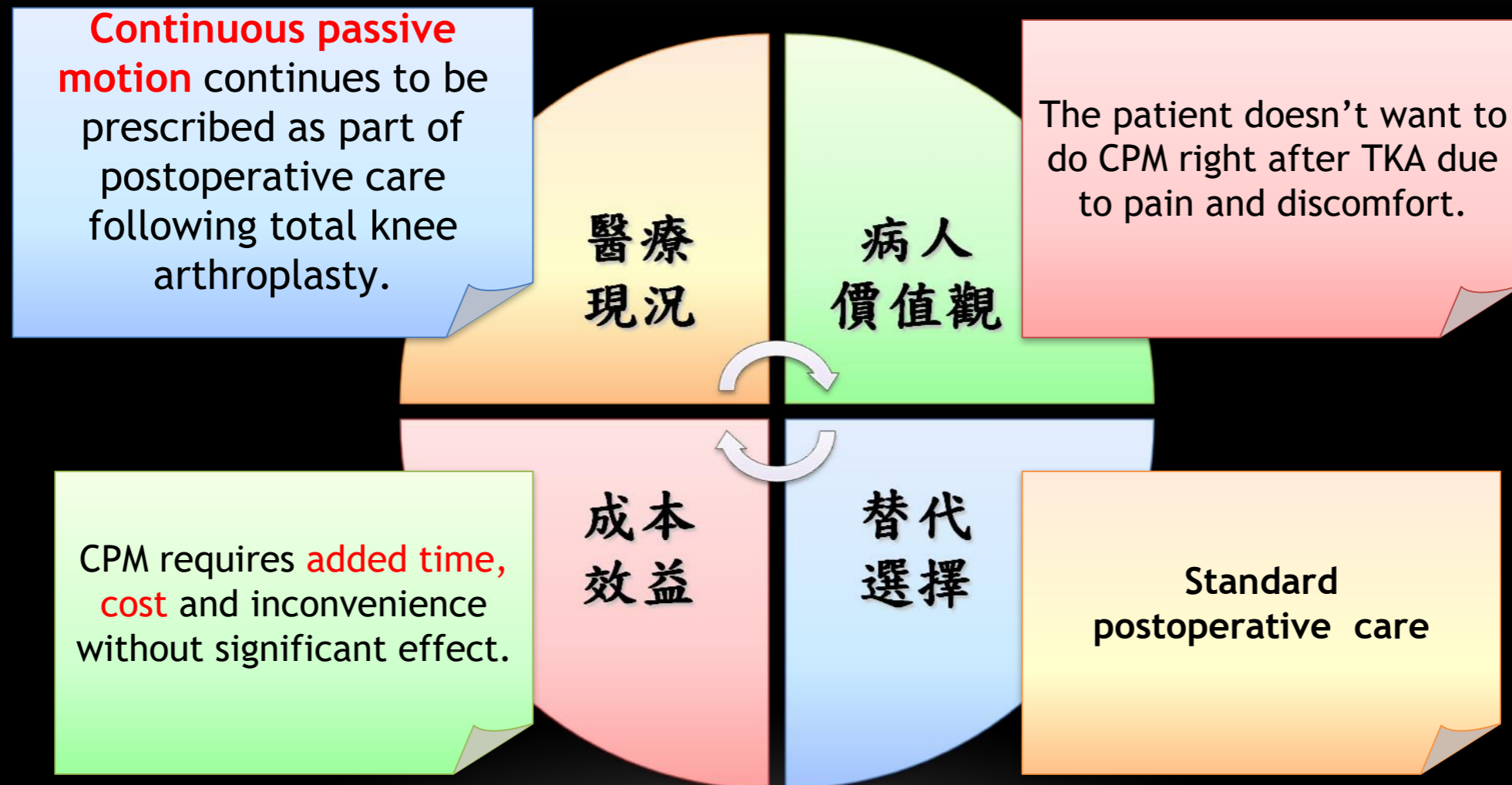
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| 保固年限 | 乙年 |
| 產品相關資訊 | http://www.supervisor.com.tw |
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| 點擊次數 | 4051 次 |
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| 最新修改日期 | 2017/8/22 下午 02:11:00 |

衛福部輔具入口資源網

https://repat.sfaa.gov.tw/07product/pro_a_list.asp?offset=40

Step4. Apply

INTEGRATE WITH OUR CLINICAL EXPERTISE AND PATIENT VALUES 整合運用於實際患者的治療決策，告知臨床運用



STANDARD POSTOPERATIVE CARE

tional knee exercises. Standard postoperative care could include muscle-strengthening exercises (isometric or dynamic), functional exercises, gait training, immobilisation or ice, provided both groups received the same intervention. Additional knee exercises could include instructions or supervised active or passive knee ROM exercises. They could not include knee exercises provided with any type of CPM device.

Step4. Apply

INTEGRATE WITH OUR CLINICAL EXPERTISE AND PATIENT VALUES 整合運用於實際患者的治療決策，告知臨床運用

小姐您好：

針對您對於全膝關節術後照顧的部分所提出的疑問，跟您及媽媽分兩部分報告一下

- 第一、**效果**方面，在媽媽**有配合治療師進行復健**的情況下，就我們所查詢的文獻，**搭配機器進行輔助運動並沒有顯著的效果**。
- 第二、**價錢**方面，租用機器也需要一筆不少的花費，一天**平均需花費500元**(且至少須租借10天)。

因此若是媽媽因術後的疼痛及不適，是**可以不使用機器來輔助運動**的。但在住院期間及後續出院後都需**依照醫囑內容持續進行復健治療**。