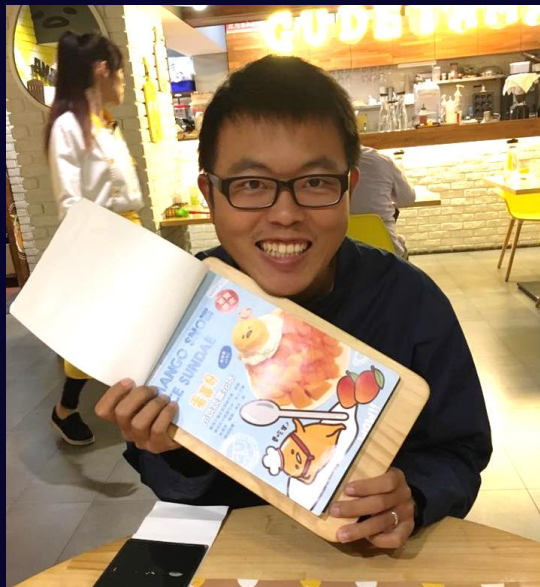


林柏安

麻醉部
麻醉科醫師



楊孟達

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李季樺

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國防醫學院三軍總醫院

實證醫學競賽



臨床情境

72歲盧媽媽，罹患骨關節炎因疼痛難耐，接受左側全膝關節置換術(total knee arthroplasty, TKA)。術後住院期間依醫囑須每日執行兩次連續被動性運動(Continuous Passive Motion, CPM)，盧媽媽女兒詢問：「若才手術，傷口還很痛，真的需要現在就做嗎？還是可以回家再開始做？」

「我媽媽開完刀一直喊痛，怕她年紀大吃止痛藥傷身體，可以用電針(electro-acupuncture)或生理回饋(Biofeedback)等方式來止痛嗎？」

背景知識 – 骨關節炎

特性

1. 骨關節炎為發炎反應引起關節疼痛或功能喪失的疾病
2. 好發族群為50歲以上、女性、肥胖或先前有膝關節損傷者

治療

1. 運動治療及減重
2. NSAID或Acetaminophen 症狀治療
3. 全膝關節置換術或高脛骨截骨術

Ask

問問題

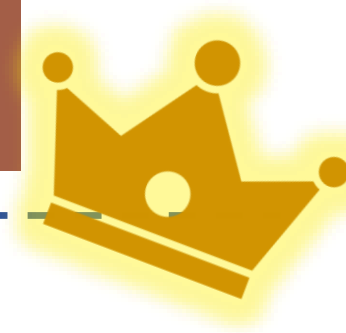
根據臨床問題形成第一個 PICO

	英文關鍵字/MeSH	同義字	中文關鍵字
P	Total knee arthroplasty/ Osteoarthritis	OA/OA knee/TKA/TKR/total knee replacement	骨關節炎/退化性關節炎 /膝關節置換術
I	Electro- acupuncture/bio feedback	TENS	電針/生理回饋/經皮電 刺激
C	analgesics		止痛藥
O	Pain/adverse effect	VAS/ pain score/side effect	疼痛程度/止痛藥用量/ 副作用

治療/預防型問題
 診斷型問題
 預後型問題
 傷害/病因型問題

Ask
問問題

根據臨床問題形成第二個 PICO



	英文關鍵字/MeSH	同義字	中文關鍵字
P	Elder woman Total knee arthroplasty	Aged Total knee replacement	老年女性 膝關節置換術後
I	continuous passive motion	Passive movement	連續被動性運動
C	Placebo	-/-	安慰劑
O	Major Active knee flexion ROM Minor length of hospitalstay		住院天數 膝關節活動度

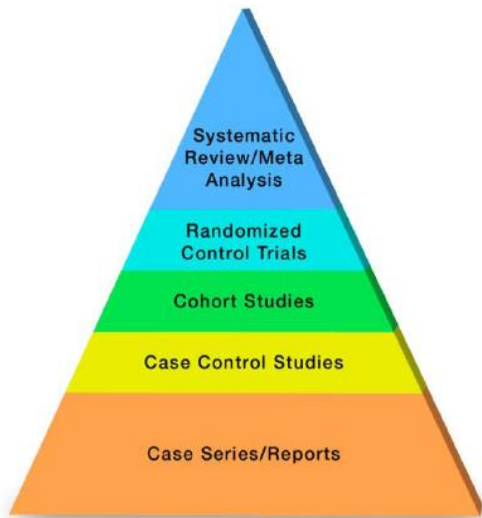
Ask
問問題

- 治療/預防型問題
 診斷型問題
 預後型問題
 傷害/病因型問題

The New Evidence Pyramid

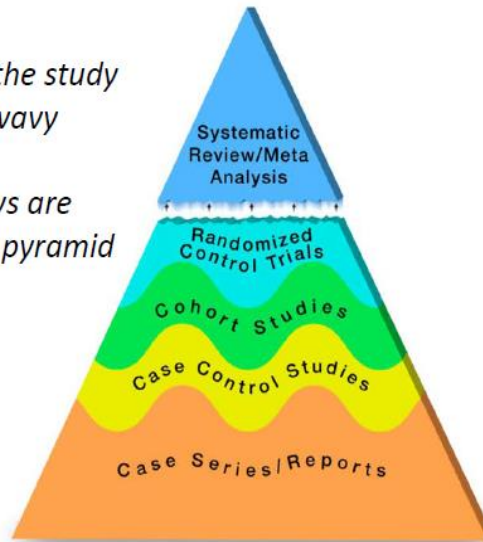
(The Evidence Trapezoid)

The traditional pyramid

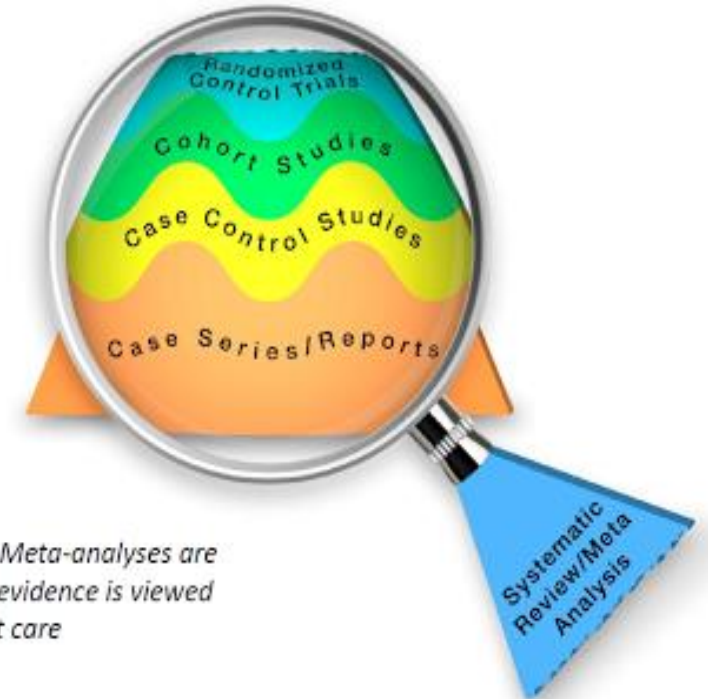


Revising the pyramid

- (1) Lines separating the study designs become wavy (GRADE)
- (2) Systematic reviews are 'chopped off' the pyramid



The revised pyramid



Systematic reviews & Meta-analyses are a lens through which evidence is viewed and applied to patient care

檢索策略 - 搜尋Cochrane Library - 提升檢索效率



Cochrane Reviews 7 Cochrane Protocols 0 Trials 435 Editorials 0 Special collections 0 Clinical Answers 1 Other Reviews

7 Cochrane Reviews matching **continuous passive motion in Title Abstract Keyword**

Cochrane Database of Systematic Reviews
Issue 11 of 12, November 2019

Select all (7) Export selected citation(s) Show all previews

Order by **Relevancy** Results per page **25**

- Continuous passive motion** for preventing venous thromboembolism after total knee arthroplasty
Mao Lin He, Zeng Ming Xiao, Ming Lei, Ting Song Li, Hao Wu, Jun Liao
Intervention Review 29 July 2014 New search Free access
[Show preview](#)
- Continuous passive motion** following total knee arthroplasty in people with arthritis
Lisa A Harvey, Lucie Brosseau, Robert D Herbert
Intervention Review 6 February 2014 Free access
[Show PICOs BETA](#) [Show preview](#)
- Post-operative therapy** for metacarpophalangeal arthroplasty
- Interventions** for congenital talipes equinovarus (clubfoot)

(Continuous passive motion) AND (osteoarthritis)

關鍵字

Acquire

料

檢索策略 - 搜尋EMBASE-提升檢索效率

Embase®

<input type="checkbox"/>	#15	#14 AND [aged]/lim	19
<input type="checkbox"/>	#14	('total knee arthroplasty'/exp OR 'total knee arthroplasty' OR (total AND ('knee'/exp OR knee) AND ('arthroplasty'/exp OR arthroplasty))) AND ('continuous passive motion'/exp OR 'continuous passive motion' OR (continuous AND passive AND ('motion'/exp OR motion))) AND rom AND ('pain'/exp OR pain)	36
<input type="checkbox"/>	#13	('total knee arthroplasty'/exp OR 'total knee arthroplasty' OR (total AND ('knee'/exp OR knee) AND ('arthroplasty'/exp OR arthroplasty))) AND ('continuous passive motion'/exp OR 'continuous passive motion' OR (continuous AND passive AND ('motion'/exp OR motion))) AND rom	69
<input type="checkbox"/>	#12	('total knee arthroplasty'/exp OR 'total knee arthroplasty' OR (total AND ('knee'/exp OR knee) AND ('arthroplasty'/exp OR arthroplasty))) AND ('continuous passive motion'/exp OR 'continuous passive motion' OR (continuous AND passive AND ('motion'/exp OR motion)))	336
<input type="checkbox"/>	#11	('total knee arthroplasty'/exp OR 'total knee arthroplasty' OR (total AND ('knee'/exp OR knee) AND ('arthroplasty'/exp OR arthroplasty))) AND ('continuous passive motion'/exp OR 'continuous passive motion' OR (continuous AND passive AND ('motion'/exp OR motion)))	336
<input type="checkbox"/>	#10	('total knee arthroplasty'/exp OR 'total knee arthroplasty' OR (total AND ('knee'/exp OR knee) AND ('arthroplasty'/exp OR arthroplasty))) AND ('continuous passive motion'/exp OR 'continuous passive motion' OR (continuous AND passive AND ('motion'/exp OR motion)))	336
<input type="checkbox"/>	#9	('total knee arthroplasty'/exp OR 'total knee arthroplasty' OR (total AND ('knee'/exp OR knee) AND ('arthroplasty'/exp OR arthroplasty))) AND ('continuous passive motion'/exp OR 'continuous passive motion' OR (continuous AND passive AND ('motion'/exp OR motion)))	336
<input type="checkbox"/>	#8	'total knee arthroplasty'/exp OR 'total knee arthroplasty' OR (total AND ('knee'/exp OR knee) AND ('arthroplasty'/exp OR arthroplasty))	38,871
<input type="checkbox"/>	#7	('total knee arthroplasty'/exp OR 'total knee arthroplasty') AND ('continuous passive motion'/exp OR 'continuous passive motion') AND ('arthritis'/exp OR arthritis) AND ([cochrane review]/lim OR [systematic review]/lim) AND [2014-2019]/py	5
<input type="checkbox"/>	#6	('total knee arthroplasty'/exp OR 'total knee arthroplasty') AND 'passive movement' AND arthritis AND ([cochrane review]/lim OR [systematic review]/lim) AND [2014-2019]/py	3
<input type="checkbox"/>	#5	('total knee arthroplasty'/exp OR 'total knee arthroplasty') AND 'passive movement' AND arthritis AND ([cochrane review]/lim OR [systematic review]/lim) AND [2014-2019]/py	3
<input type="checkbox"/>	#4	('total knee arthroplasty':ti AND 'continuous passive motion machine':ti AND 'knee flexion moment':ab,ti OR 'knee function':ab,ti) AND 'knee osteoarthritis':ab,ti AND ([cochrane review]/lim OR [systematic review]/lim) AND [2014-2019]/py	11
<input type="checkbox"/>	#3	('total knee arthroplasty':ti AND 'continuous passive motion machine':ti AND 'knee flexion moment':ab,ti OR 'knee function':ab,ti) AND 'knee osteoarthritis':ab,ti AND ([cochrane review]/lim OR [systematic review]/lim) AND [2015-2019]/py	10
<input type="checkbox"/>	#2	'post total knee arthroplasty' OR (post AND total AND ('knee'/exp OR knee) AND arthroplasty)	0
<input type="checkbox"/>	#1	tka AND 'continuous passive motion machine'/exp	4

- PICO search
- 使用Emtree，增加精確性
- 使用內建synonyms系統，增加搜尋廣度

檢索策略 - 搜尋EMBASE-提升檢索效率

Select number of items Selected: 0 (clear)

Show all abstracts | Sort by: Relevance Publication Year Entry Date

<input type="checkbox"/>	<p>1</p> <p>Ultrasound-guided adductor canal block using levobupivacaine versus periarticular levobupivacaine infiltration after total knee arthroplasty: A randomized clinical trial</p> <p>Cicekci F., Yildirim A., Önal O., Celik J.B., Kara I.</p> <p>Sao Paulo Medical Journal 2019 137:1 (45-53) Cited by: 1</p> <p>Embase MEDLINE <input checked="" type="checkbox"/> Abstract <input checked="" type="checkbox"/> Index Terms > View Full Text</p> <p>new Similar records ></p>
<input type="checkbox"/>	<p>2</p> <p>The Influence of Gait Pattern with AIDS on the Patient's Recovery in an Early Period of Total Knee Replacement</p> <p>Vassileva D., Nedelcheva I., Mindova S., Karaganova I.</p> <p>Acta Medica Bulgarica 2019 46:2 (36-40) Cited by: 0</p> <p>Embase <input checked="" type="checkbox"/> Abstract <input checked="" type="checkbox"/> Index Terms > View Full Text</p> <p>new Similar records ></p>
<input type="checkbox"/>	<p>3</p> <p>Improved early outcome after TKA through an app-based active muscle training programme-a randomized-controlled trial</p> <p>Hardt S., Schulz M.R.G., Pfitzner T., Wassilew G., Horstmann H., Liodakis E., Weber-Spickschen T.S.</p> <p>Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA 2018 26:11 (3429-3437) Cited by: 2</p> <p>MEDLINE <input checked="" type="checkbox"/> Abstract <input checked="" type="checkbox"/> Index Terms > View Full Text</p> <p>new Similar records ></p>
<input type="checkbox"/>	<p>4</p> <p>Short-term outcomes for total knee arthroplasty patients with active extension lag</p> <p>McGinn T.L., Etcheson J.I., Gwam C.U., George N.E., Mohamed N.S., Mistry J.B., Ananaba U., Bhawe A.</p> <p>Annals of Translational Medicine 2018 6:11 Article Number 204</p> <p>Embase <input checked="" type="checkbox"/> Abstract <input checked="" type="checkbox"/> Index Terms > View Full Text</p> <p>new Similar records ></p>
<input type="checkbox"/>	<p>5</p> <p>Randomized, prospective, monocentric study to compare the outcome of continuous passive motion and controlled active motion after total knee arthroplasty</p> <p>Schulz M., Krohne B., Röder W., Sander K.</p> <p>Technology and Health Care 2018 26:3 (499-506) Cited by: 0</p> <p>Embase MEDLINE <input checked="" type="checkbox"/> Abstract <input checked="" type="checkbox"/> Index Terms > View Full Text</p> <p>new Similar records ></p>
<input type="checkbox"/>	<p>6</p> <p>Rehabilitation outcomes for total knee arthroplasties: Continuous adductor canal block versus continuous femoral nerve block</p> <p>Brennan P.T., Villa J.M., Rossi M.D., Sanchez-Gonzalez M.A., Lavernia C.J.</p> <p>Geriatric Orthopaedic Surgery and Rehabilitation 2018 9</p> <p>Embase <input checked="" type="checkbox"/> Abstract <input checked="" type="checkbox"/> Index Terms > View Full Text</p>
<input type="checkbox"/>	<p>7</p> <p>Comparison of 2 analgesia modalities in total knee replacement surgery:</p> <p>Zinkus J., Mockutė L., Gelmanas A., Tamošiūnas R., Vertelis A., Macas A.</p> <p>Medical Science Monitor 2017 23 (3019-3025) Cited by: 2</p>

- Similar records
- 使用Limit: Human
- Filter: sources, studytypeSystematic review→ randomized controlled trial→ controlled trial → cohort

檢索策略 - 搜尋PubMed - 提升檢索效率



PubMed.gov
US National Library of Medicine
National Institutes of Health

PubMed (dropdown) (total knee arthroplasty) AND (continuous passive motion) AND ((pain) AND (ROM)) | Search

Create RSS Create alert Advanced Help

Article types: Clinical Trial, **Review**, Customize ...

Text availability: Abstract, Free full text, Full text

Publication dates: 5 years, 10 years, Custom range...

Species: Humans, Other Animals

Format: Summary Sort by: Most Recent Send to Filters: Manage Filters

Best matches for (total knee arthroplasty) AND (continuous passive motion) AND ((pain) AND (ROM)):
[Continuous passive motion following total knee arthroplasty in people with arthritis.](#)
Harvey LA et al. Cochrane Database Syst Rev. (2014)
[The effect of continuous passive motion and sling exercise training on clinical and functional outcomes following total knee arthroplasty: a randomized active-controlled clinical study.](#)
Mau-Moeller A et al. Health Qual Life Outcomes. (2014)
[Does advanced cryotherapy reduce pain and narcotic consumption after knee arthroplasty?](#)
Thienpont E et al. Clin Orthop Relat Res. (2014)

Switch to our new best match sort order

Search results
Items: 4

Filters activated: Review. Clear all to show 33 items.

- [Evolution of TKA design.](#)
1. Dall'Oca C, Ricci M, Vecchini E, Giannini N, Lamberti D, Tromponi C, Magnan B. Acta Biomed. 2017 Jun 7;88(2S):17-31. doi: 10.23750/abm.v88i2 -S.6508. Review. PMID: 28657559 **Free PMC Article** [Similar articles](#)
- [Continuous passive motion following total knee arthroplasty in people with arthritis.](#)
2. Harvey LA, Brosseau L, Herbert RD. Cochrane Database Syst Rev. 2014 Feb 6;(2):CD004260. doi: 10.1002/14651858.CD004260.pub3. Review. PMID: 24500904 [Similar articles](#)

Search details: ("arthroplasty, replacement, knee" [MeSH Terms] OR ("arthroplasty"[All Fields] AND "replacement"[All Fields]) AND "knee"[All Fields]) OR "knee replacement arthroplasty"[All Fields]

Recent Activity: (total knee arthroplasty) AND (continuous passive motion) AND ((p... (4) PubMed), (total knee arthroplasty) AND (continuous passive motion) AND ((p... (33) PubMed), (total knee arthroplasty) AND (continuous passive motion) AND ((p... (152) PubMed), (total knee arthroplasty) AND (continuous

("arthroplasty, replacement, knee OR ("arthroplasty ")OR "knee replacement arthroplasty "AND (continuous AND ("range of motion" OR OR "passive motion"))) AND (cpmAND machine)

- Advanced search, Truncation, Boolean logic
- My NCBI: 建置Clinical Queries
- 自然語言，同步MeSH檢索
- Filter: review

期刊文章
1

會議論文
0

碩博士論文
0

電子書
0

依下方條件來精確結果

來源資料庫

CEPS中文電子期刊 (1)

學科分類

醫藥衛生 (1)

年代

清除條件 ✕

2012年以後 (1)

出版品名稱

護理暨健康照護研究 (1)

查詢 (膝關節) = 所有欄位 AND (連續被動性運動) = 所有欄位

查詢表達式: [ALL]:膝關節 AND [ALL]:連續被動性運動

年代: 2012年以後 ✕

篇名-關鍵字-摘要

作者

刊名

起始年

結束年

檢索結果再查詢

每頁 10 筆

共 1 筆, 1-1 筆

共 1 頁 ◀ 1 ▶

書目匯出

加入收藏

加入購物車

相關程度最高

1 連續被動性運動對於膝關節置換術後老年病人之影響—以台灣某醫學中心骨科病房為例

鄭秀容(Hsiu-Jung Cheng) ; 杜異珍(Yih-Jen Duh) ; 巫美惠(Mei-Hui Wu) ; 潘建州(Chien-Chou Pan) ;

陳建輝(Chien-Hui Chen) ; 李政鴻(Cheng-Hung Lee) ;

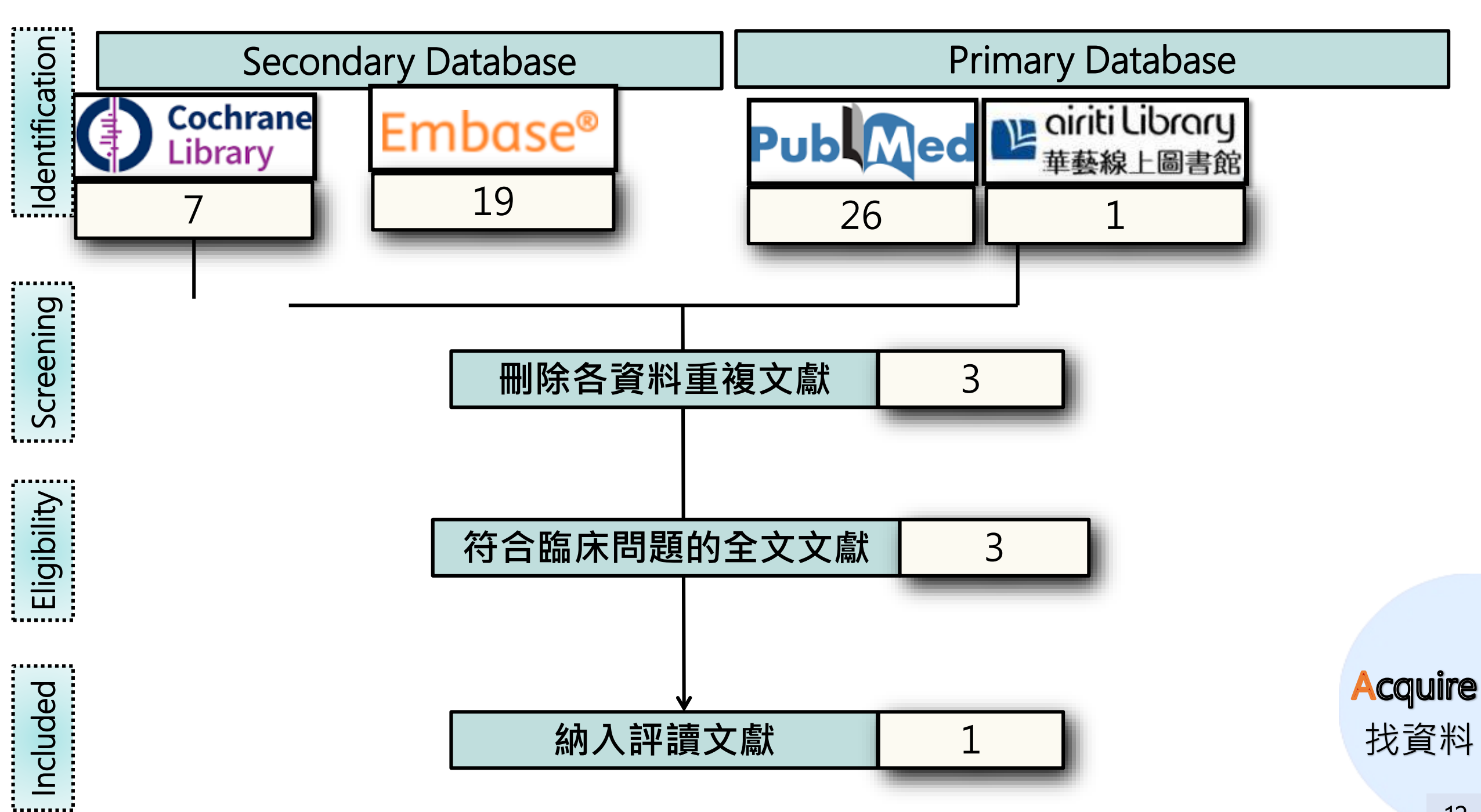
護理暨健康照護研究 8卷2期 (2012/06), 158-166

被動性運動 ; 主動性膝關節彎曲角度 ; 住院日數 ; 膝關節置換術 ; 老年病人 ; continuous passive

active knee flexion ; length of stay ; total knee arthroplasty ; older patients

NHR.08.2.158 ?

膝關節置換術/連續被動性運動



比較收納文獻 - 選出最佳文獻，並提出我們的理由

來源	收納文章	S	P	I	C	O
	<p>標題2014</p> <p><u>Continuous passive motion following total knee arthroplasty in people with arthritis</u></p>	●	●	●	●	●
	<p>標題2018</p> <p><u>The effect of repetitive active range of motion versus continuous passive motion on early functional outcomes after primary total knee replacement</u></p>	●	●	●	●	●
	<p>標題2003</p> <p><u>Continuous passive motion following total knee arthroplasty.</u></p>	●	●	●	●	●

嚴格評讀

- ✓ 最佳的研究設計
- ✓ 較新的發表年份
- ✓ 含有亞洲人種資料
未情境



**Cochrane
Library**

Cochrane Database of Systematic Reviews

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

Harvey LA, Brosseau L, Herbert RD



[2019]

Systematic Review Checklist

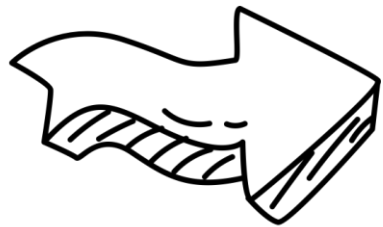


Appraisal

評讀文獻



1. Did the review address a clearly focused question ?
此回顧是否問了一個清楚、明確的臨床問題？



HINT: An issue can be “focused” In terms of

1. The population studied
2. The intervention given
3. The outcome considered

評讀結果

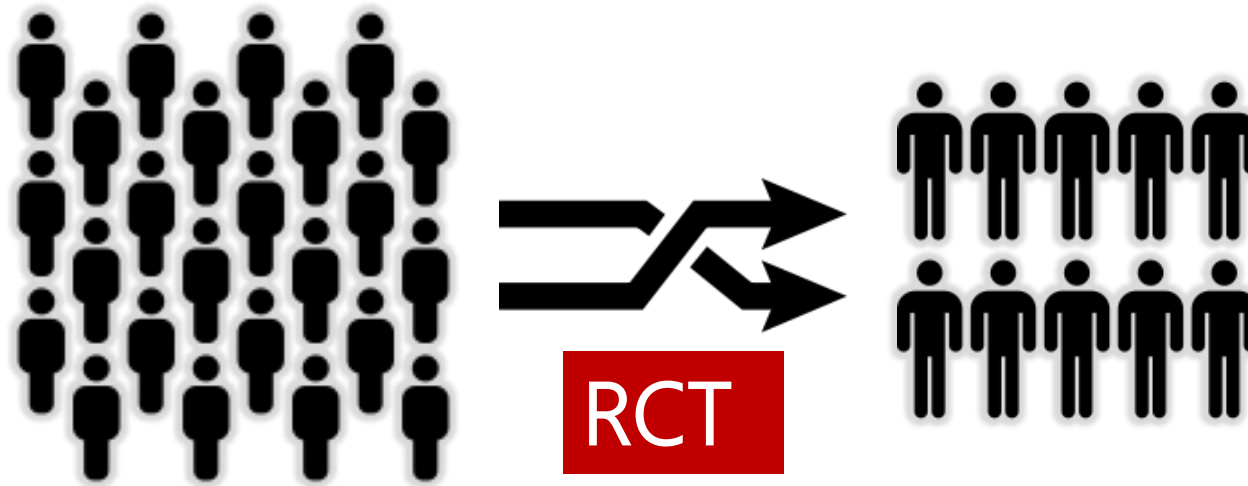
P	Total knee arthroplasty
I	Continuous passive motion
C	No CPM
O	Pain/ ROM
T	Short term(<6weeks) Long term (>6weeks)
<p>作者清楚地說明了PICOT，因此評讀結果為Yes。</p>	

Knee replacement surgery is common for the management of arthritis but can cause knee stiffness. Knee stiffness can make it difficult to perform certain activities including standing up from a seated position. Continuous passive motion (CPM) is a way of providing regular movement to the knee using a machine. This Cochrane review presents what we know about the effects of CPM following knee surgery. After searching for all relevant studies in January 2013, we found 24 studies with 1445 participants who had knee replacement surgery primarily for knee arthritis. CPM was started from the first to the fourth day post surgery and applied for 1.5 to 24 hours a day, over 1 to 17 days. The review showed that CPM following knee replacement surgery probably improves the ability to bend the knee slightly and the person's quality of life but may not improve pain or function. We are uncertain about the effects of CPM on need for manipulation under anaesthesia, participants' perceptions of treatment effectiveness or risk of complications.

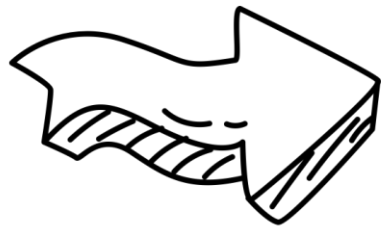
Yes

No

Unclear



2. Did the authors look for the right type of papers?
作者是否收納適當的研究類型？



HINT: “The best sort of studies” would

- 1. Address the review’s question**
- 2. Have an appropriate study design (usually RCTs for papers evaluating interventions)**

評讀結果

Criteria for considering studies for this review

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 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.

優點

1. 收錄符合治療型問題的**RCT文章、觀察型研究**
2. 清楚定義了**納入條件**
3. 清楚定義了**排除條件**
4. 納入的RCT，皆使用**雙盲及 Placebo capsule**
5. RCT文章與觀察性文章**分開統計**

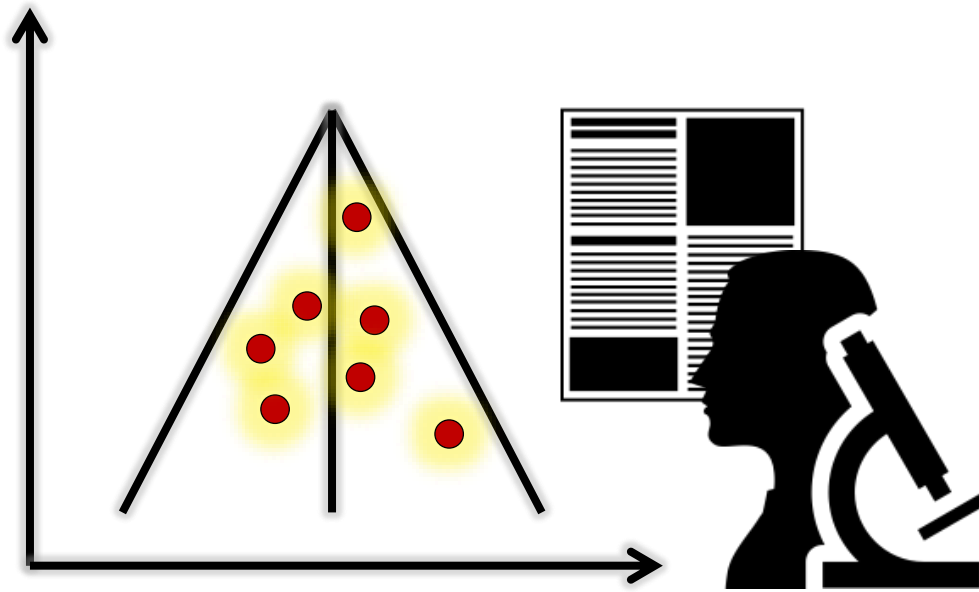
缺點

1. 非所有收錄文章符合治療型問題的**RCT文章、觀察型研究**

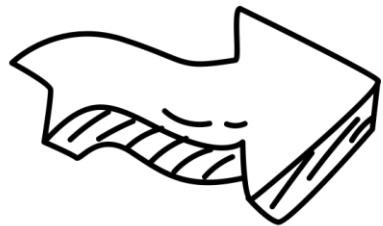
Yes

No

Unclear



3. Do you think the important, relevant studies were included?
重要、相關的研究是否皆被納入？



HINT: Look for

1. Which bibliographic databases were used
2. Follow up from reference lists
3. Personal contact with experts
4. Search for unpublished as well as published studies
5. Search for non-English language studies

評讀結果

Search methods for identification of studies

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).

優點

1. 作者盡可能搜尋了各種一級和二級資料庫
2. 搜尋並未限制語言
3. 列出flow chart清楚說明納入、排除理由
4. 理想對稱的funnel plot
5. 包含亞洲(台灣)資料

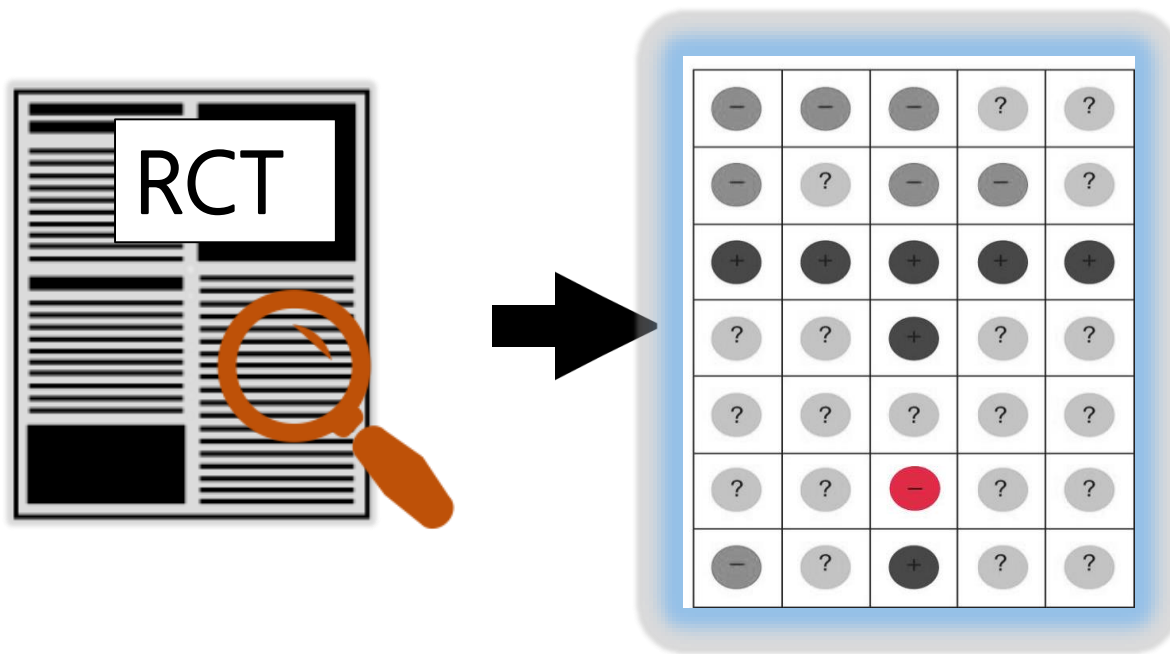
缺點

1. 語言限制與否並無說明
沒有漏斗圖

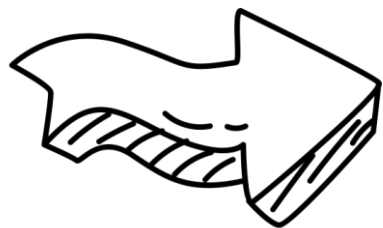
Yes

No

Unclear



4. Did the review's authors do enough to assess the quality of the included studies?
作者是否有評估收納研究的品質？



HINT:

The authors need to consider the rigour of the studies they have identified. Lack of rigour may affect the studies results.

評讀結果

Assessment of risk of bias

Two review authors independently assessed the risk of bias in each trial using the method recommended in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). We assessed the following methodological domains:

1. random sequence generation;
2. allocation sequence concealment;
3. blinding of participants;
4. blinding of therapists;
5. blinding of outcome assessors;
6. incomplete outcome data;
7. selective outcome reporting; and
8. other potential sources of bias.

We rated each potential source of bias as high, low or unclear (either lack of information or uncertainty over the potential for bias). We attempted to contact all study authors to clarify any ambiguities.

We resolved disagreements in ratings by discussion or, where necessary, by consulting a third review author.

Yes

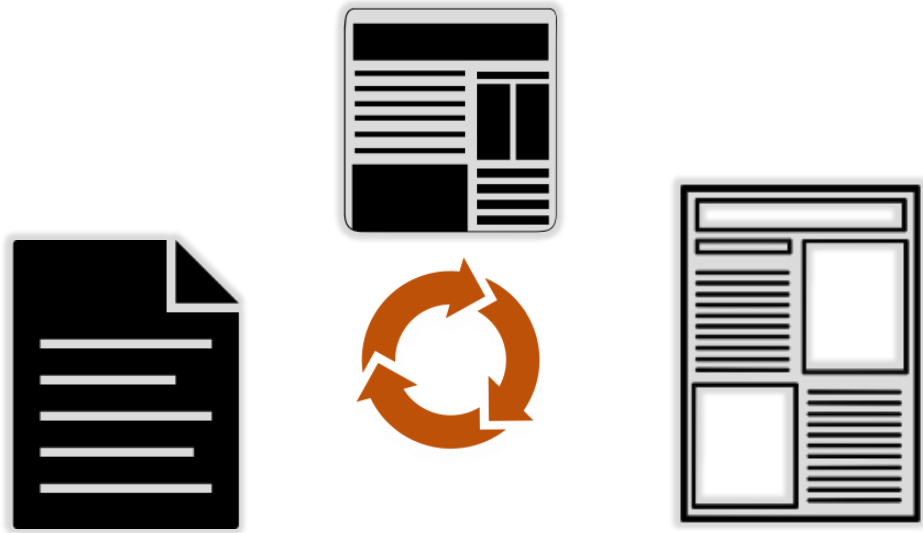
	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias	Participant blinding?	Personnel blinding?	Outcome assessor blinding?
Alkire 2010	+	?	+	+	+	+	+	?
Bennett 2005	+	+	+	+	+	+	+	+
Bruun-Olsen 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 1998	?	?	+	+	+	+	+	+
Ritter 1989	+	?	+	+	+	+	+	?
Sahin 2006	+	?	+	?	+	+	+	?
Vince 1987	?	?	?	+	+	+	+	?
Worland 1998	?	?	?	+	+	+	+	+

優點

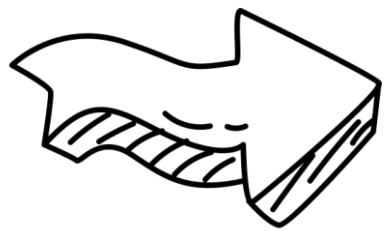
1. 由兩位作者獨立評讀
2. 使用Cochrane Risk of Bias 工具做評讀
3. 評級依研究設計、限制、一致性判斷貢獻度

缺點

Unclear



5. If the results of the review have been combined, was it reasonable to do so?
作者是否有把各個研究的結果合併起來？
這樣的合併是合理的嗎？



HINT: Consider whether

- 1. The results were similar from study to study**
- 2. The results of all the included studies are clearly displayed**
- 3. The results of the different studies are similar**
- 4. The reasons for any variations in results are discussed**

主要結果-active knee flexion ROM

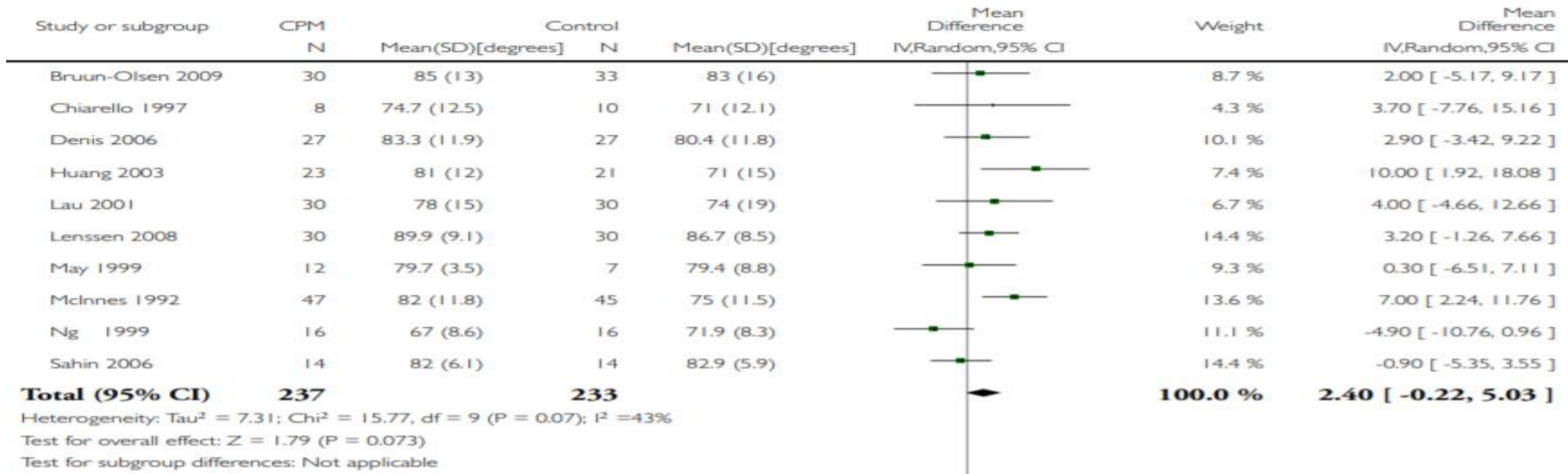
Activity
度

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



異源性(Heterogeneity):Chi²/df=1.75 , P=0.07 , I²=43%

作者採用 “random effect model”

高異質性

Yes

No

Unclear

次要結果-pain

Analysis 1.4. Comparison 1 Main comparison, Outcome 4 Pain - short-term effects.

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

Comparison: 1 Main comparison

Outcome: 4 Pain - short-term effects

Study or subgroup	CPM		Control		Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
	N	Mean(SD)[points]	N	Mean(SD)[points]			
Bruun-Olsen 2009	30	4 (2.3)	33	4 (2.1)		11.1 %	0.0 [-1.09, 1.09]
Denis 2006	27	2.77 (1.71)	27	3.98 (2.48)		10.5 %	-1.21 [-2.35, -0.07]
Lenssen 2003a	20	2.3 (2.6)	18	4.5 (2.4)		6.5 %	-2.20 [-3.79, -0.61]
Lenssen 2008	30	-1.58 (0.47)	30	-1.53 (0.41)		27.7 %	-0.05 [-0.27, 0.17]
May 1999	12	1.5 (1.6)	7	2.1 (2.4)		4.5 %	-0.60 [-2.60, 1.40]
McInnes 1992	47	2.8 (2.1)	45	3.6 (2.1)		14.6 %	-0.80 [-1.66, 0.06]
Montgomery 1996	28	5 (2.3)	32	5 (1.5)		12.4 %	0.0 [-1.00, 1.00]
Sahin 2006	14	3.85 (1.29)	14	3.5 (1.34)		12.7 %	0.35 [-0.62, 1.32]
Total (95% CI)	208		206			100.0 %	-0.38 [-0.84, 0.08]

Heterogeneity: $\tau^2 = 0.19$; $\chi^2 = 14.07$, $df = 7$ ($P = 0.05$); $I^2 = 50\%$

Test for overall effect: $Z = 1.64$ ($P = 0.10$)

Test for subgroup differences: Not applicable

異源性(Heterogeneity): $\chi^2/df=2.01$, $P=0.05$, $I^2=23\%$

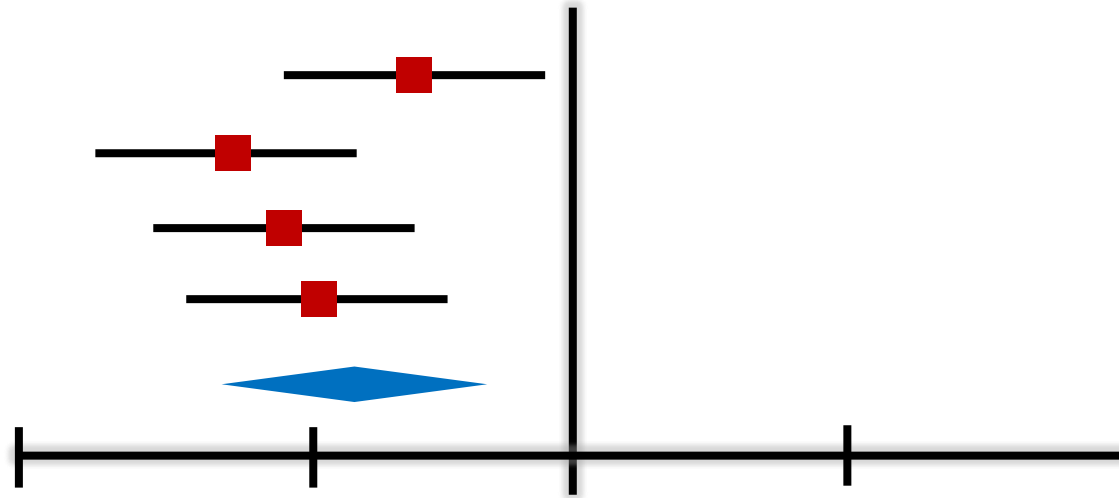
作者採用 “random effect model”

高異質性

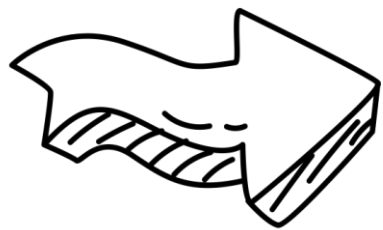
Yes

No

Unclear



6. What are the overall results of the review?
這篇回顧呈現了什麼結果？



HINT: Consider

1. If you are clear about the review's "bottom line" results
2. What these are (numerically if appropriate)
3. How were the results expressed (NNT, odds ratio etc)

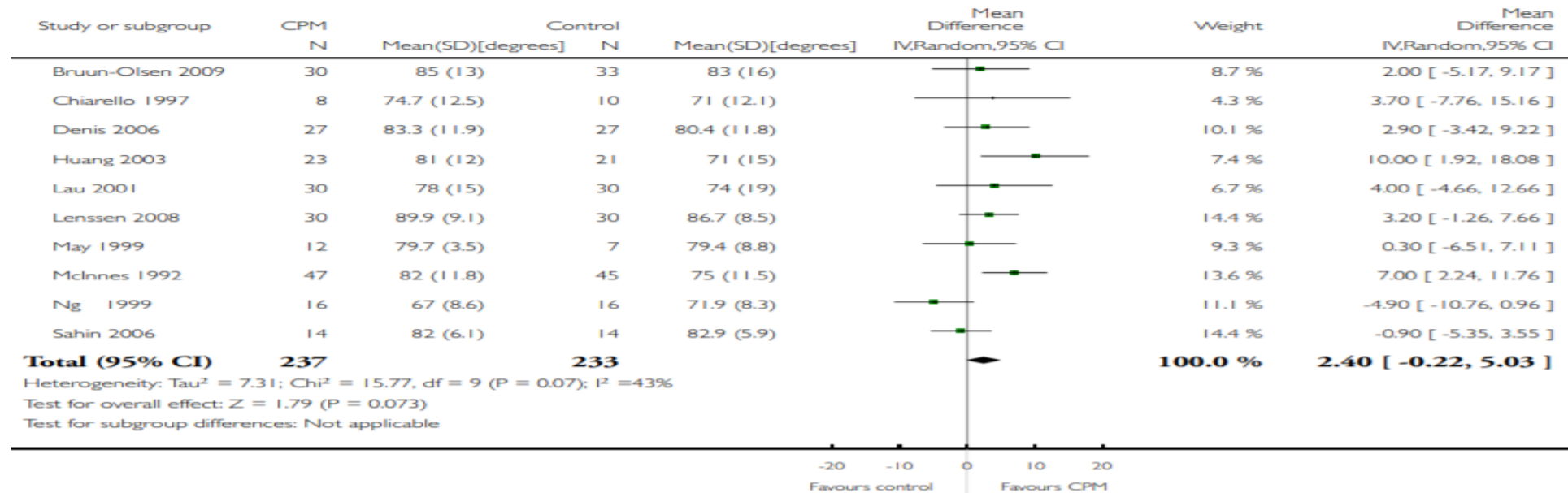
主要結果-active knee flexion ROM

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



Continuous passive motion following total knee arthroplasty in people with arthritis (Review)
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Intervention	Continuous passive motion (CPM)
Comparison	No CPM
研究結果	RR=2.40 [-0.22,5.03](95%CI)
time	6周內

次要結果-pain

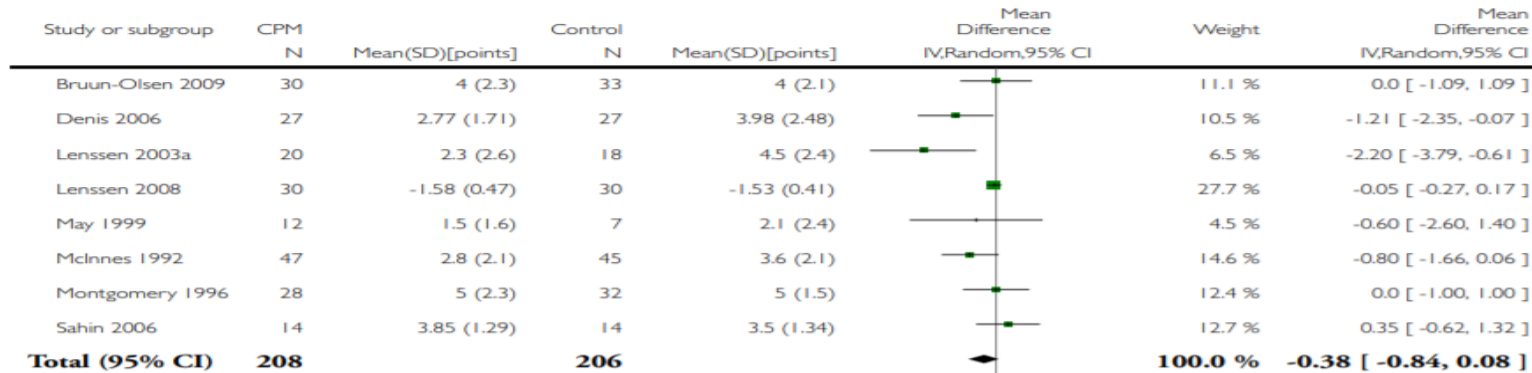
Importance
重要性

Analysis 1.4. Comparison 1 Main comparison, Outcome 4 Pain - short-term effects.

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

Comparison: 1 Main comparison

Outcome: 4 Pain - short-term effects

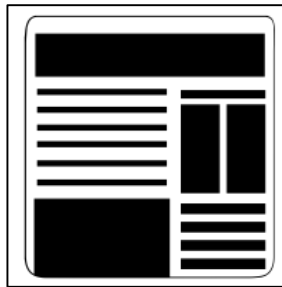
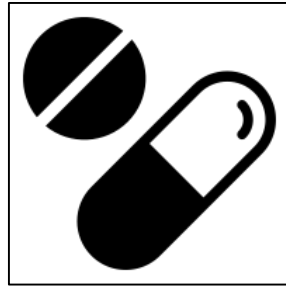


Heterogeneity: Tau² = 0.19; Chi² = 14.07, df = 7 (P = 0.05); I² = 50%

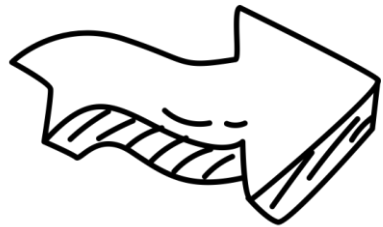
Test for overall effect: Z = 1.64 (P = 0.10)

Test for subgroup differences: Not applicable

Intervention	Continuous passive motion
Comparison	No continuous passive motion
研究結果	RR=-0.38[-0.84,0.08](95%CI)
time	6周內
結論	執行CPM與否對於六周內疼痛狀況未達顯著差異



7. How precise are the results? 結果精準嗎？



HINT: Look at the confidence intervals, if given

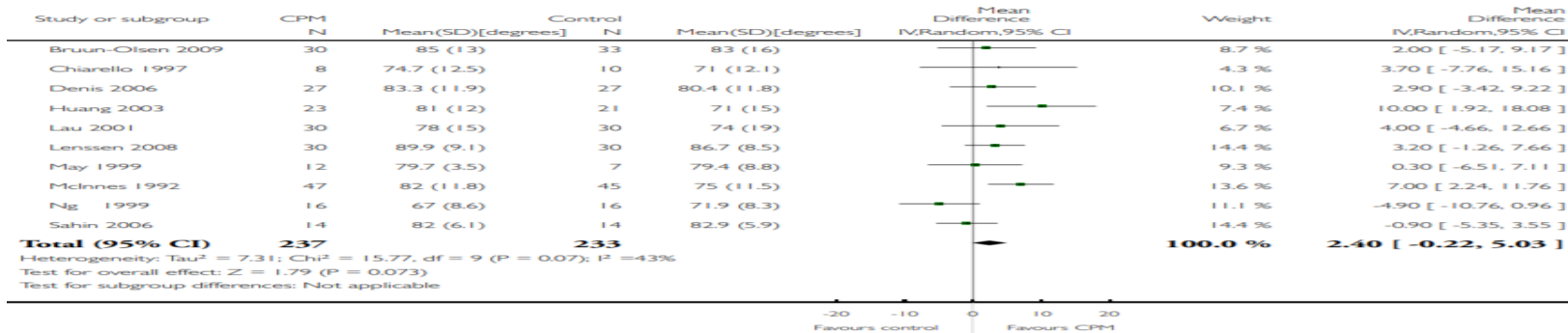
主要結果 - active knee flexion ROM

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



Continuous passive motion following total knee arthroplasty in people with arthritis (Review)
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Intervention	Continuous passive motion (CPM)
Comparison	No CPM
研究結果	RR=2.40 [-0.22,5.03](95%CI)
time	6周內
結論	使用CPM對於六周內膝關節屈曲角度並無差異

Yes

No

Unclear

次要結果 - pain

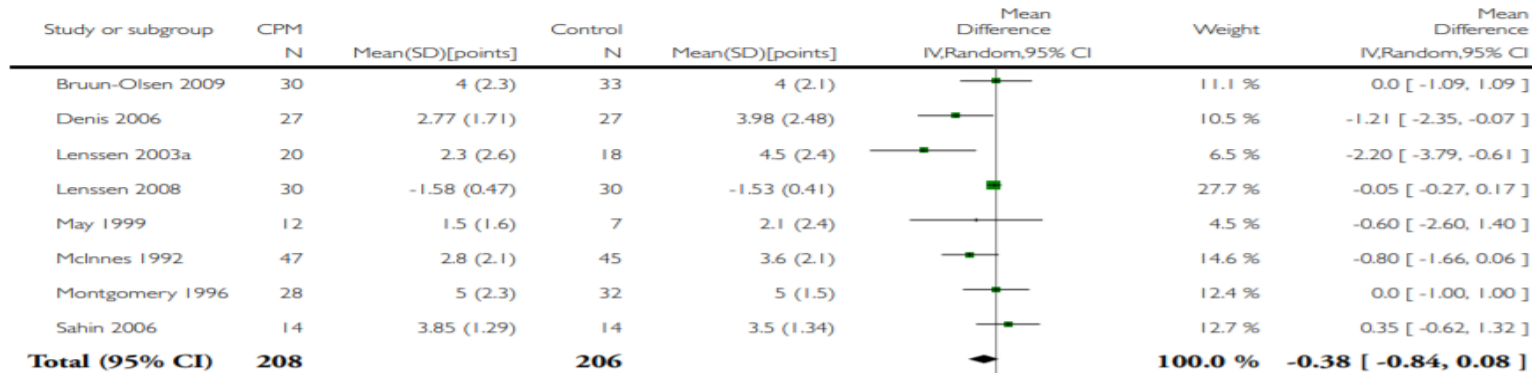
Importance
重要性

Analysis 1.4. Comparison 1 Main comparison, Outcome 4 Pain - short-term effects.

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

Comparison: 1 Main comparison

Outcome: 4 Pain - short-term effects



Heterogeneity: Tau² = 0.19; Chi² = 14.07, df = 7 (P = 0.05); I² = 50%

Test for overall effect: Z = 1.64 (P = 0.10)

Test for subgroup differences: Not applicable

Intervention	Continuous passive motion
Comparison	No continuous passive motion
研究結果	RR=-0.38[-0.84,0.08](95%CI)
time	6周內
結論	執行CPM與否對於六周內疼痛狀況未達顯著差異
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	<input type="checkbox"/> Unclear

評定證據品質 - GRADEpro online

GRADEpro | GDT

Importance
重要性

請輸入文章title

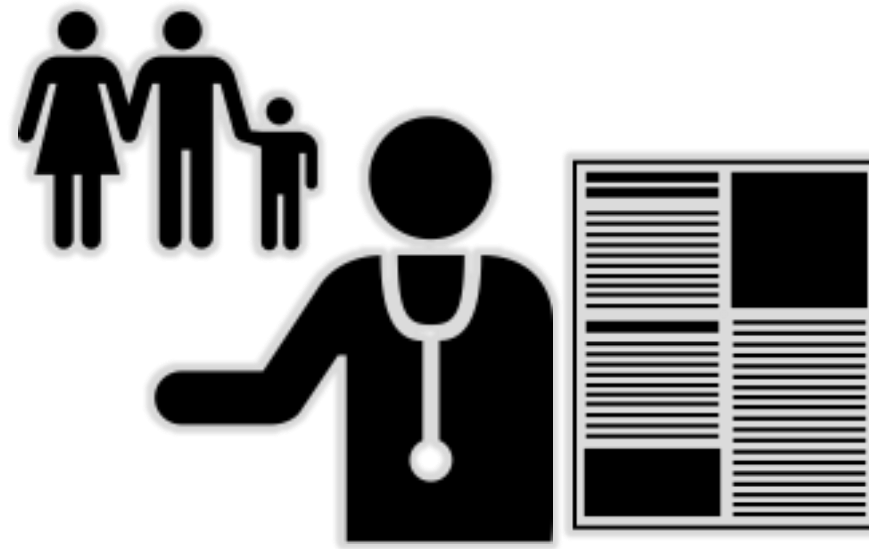
		Knee flexion ROM	Pain
		SMD(95%CI) [,]	RR(95%CI) %[,]
研究設計		Systematic review of RCT	Systematic review of RCT
降 階	1. 存在誤差風險	●	●
	2. 結果不一致	●	●
	3. 證據不具直接性	●	●
	4. 結果不精準	●	●
	5. 存在發表誤差	●	●
證據等級		⊕⊕⊕○ MODERATE	⊕⊕○○ LOW

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
Pain Visual analogue scale. Scale: 0 to 10 (lower score better) Follow-up: 6 weeks	The mean pain in the control groups was 3 points	The mean pain in the intervention groups was 0.4 lower (0.8 lower to 0.1 higher)	-	414 (8 studies)	⊕⊕○○ low ^{1,3,4}	Absolute risk difference -4% (-8 to 1); relative percent change -80% (-36 to 8); not statistically significant ⁵

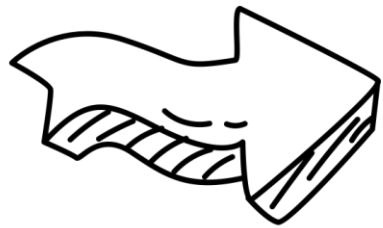
評定證據等級 - OCEBM Level of Evidence, 2011

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
How common is the problem?	Local and current random sample surveys (or censuses)	Systematic review of surveys that allow matching to local circumstances**	Local non-random sample**	Case-series**	n/a
Is this diagnostic or monitoring test accurate? (Diagnosis)	Systematic review of cross sectional studies with consistently applied reference standard and blinding	Individual cross sectional studies with consistently applied reference standard and blinding	Non-consecutive studies, or studies without consistently applied reference standards**	Case-control studies, or "poor or non-independent reference standard**	Mechanism-based reasoning
What will happen if we do not add a therapy? (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of randomized trial*	Case-series or case-control studies, or poor quality prognostic cohort study**	n/a
Does this intervention help? (Treatment Benefits)	Systematic review of randomized trials or <i>n</i> -of-1 trials	Randomized trial or observational study with dramatic effect	Randomized trial or (exceptionally) observational study with dramatic effect	Randomized trial or (exceptionally) observational study with dramatic effect	Randomized trial or (exceptionally) observational study with dramatic effect
What are the COMMON harms? (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, <i>n</i> -of-1 trial with the patient you are raising the question about, or observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect
What are the RARE harms? (Treatment Harms)	Systematic review of randomized trials or <i>n</i> -of-1 trial	Randomized trial or (exceptionally) observational study with dramatic effect	Randomized trial or (exceptionally) observational study with dramatic effect	Randomized trial or (exceptionally) observational study with dramatic effect	Randomized trial or (exceptionally) observational study with dramatic effect
Is this (early detection) test worthwhile? (Screening)	Systematic review of randomized trials	Randomized trial	Randomized trial	Randomized trial	Randomized trial

■ **【治療型問題】**
 RCT之系統性回顧文章
 證據等級為 **Level 1**



8. Can the results be applied to the local population?
此研究是否可應用到你的病患？



HINT: Consider whether

1. The patients covered by the review could be sufficiently different to your population to cause concern
1. Your local setting is likely to differ much from that of the review

評估適用性

1. 我們的病患與文獻研究是否相似？

V年齡 V性別 V種族 V共病

V同時服用其他治療藥物 V疾病嚴重度

是

2. 這項治療在台灣是否可行？

可

P

Total knee arthroplasty

符合

I

Continuous passive motion

符合

C

No CPM

符合

O

Pain, ROM

符合

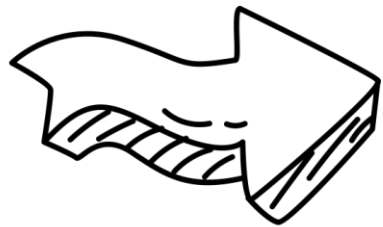
Yes

No

Unclear



9. Were all important outcomes considered?
是否所有重要的臨床結果都被考量到？



HINT: Consider whether

1. Is there other information you would like to have seen

臨床結果

Comparison 3. Main comparison - sensitivity analysis using fixed-effect model

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Active knee flexion ROM - short-term effects	10	470	Mean Difference (IV, Fixed, 95% CI)	2.29 [0.39, 4.20]
2 Active knee flexion ROM - medium-term effects	4		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
3 Active knee flexion ROM - long-term effects	3	132	Mean Difference (IV, Fixed, 95% CI)	4.12 [2.22, 6.02]
4 Pain - short-term effects	8	414	Mean Difference (IV, Fixed, 95% CI)	-0.14 [-0.34, 0.05]
5 Pain - medium-term effects	3	179	Mean Difference (IV, Fixed, 95% CI)	0.04 [-0.10, 0.18]
6 Pain - long-term effects	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
7 Function - short-term effects [standardised mean]	4		Std. Mean Difference (IV, Fixed, 95% CI)	Totals not selected
8 Function - medium-term effects [standardised mean]	6	405	Std. Mean Difference (IV, Fixed, 95% CI)	-0.08 [-0.27, 0.12]
9 Function - long-term effects [standardised mean]	4	288	Std. Mean Difference (IV, Fixed, 95% CI)	0.02 [-0.22, 0.25]
10 Quality of life - medium-term effects	2	156	Mean Difference (IV, Fixed, 95% CI)	0.75 [-2.58, 4.08]
11 Quality of life - long-term effects [points]	1	100	Mean Difference (IV, Fixed, 95% CI)	2.20 [-3.90, 8.30]
12 Participants' global assessment of treatment effectiveness - short-term effects [points]	3		Std. Mean Difference (IV, Fixed, 95% CI)	Totals not selected
13 Participants' global assessment of treatment effectiveness - medium-term effects	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.30 [-0.74, 0.14]
14 Manipulation under anaesthesia [number]	8	581	Risk Ratio (M-H, Fixed, 95% CI)	0.26 [0.11, 0.64]
15 Adverse events [number]	16	1040	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.75, 1.21]
16 Passive knee flexion ROM - short-term effects	11	697	Mean Difference (IV, Fixed, 95% CI)	2.01 [0.50, 3.52]
17 Passive knee flexion ROM - medium-term effects	4	264	Mean Difference (IV, Fixed, 95% CI)	-1.69 [-4.46, 1.08]
18 Passive knee flexion ROM - long-term effects	2	160	Mean Difference (IV, Fixed, 95% CI)	0.06 [-2.22, 2.35]
19 Active knee extension ROM - short-term effects	11	574	Mean Difference (IV, Fixed, 95% CI)	1.18 [0.33, 2.02]
20 Active knee extension ROM -	4	195	Mean Difference (IV, Fixed, 95% CI)	0.74 [-0.45, 1.92]

- 作者不只比較了關節活動度、疼痛指數，更比較了肌肉力量、需要麻醉進行復位、生活品質、傷口癒合、感染程度等等其他指標。
- 同時併用fix-effect model與random-effect model 進行sensitivity analysis

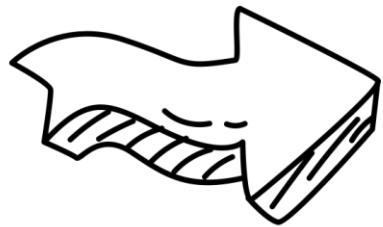
Yes

No

Unclear



10. Are the benefits worth the harms and costs?
這些好處隨之而來的傷害和花費是否值得？



HINT: Consider

1. Even if this is not addressed by the review, what do you think?



各項選擇 - 對醫療品質的影響



連續被動式運動(CPM)	有	無	證據品質
好處/效果	關節活動度		⊕⊕⊕⊖ moderate ¹
	連續被動式運動增加約2度(但無顯著差異)		
	疼痛		⊕⊕⊖⊖ low ^{1,3,4}
	短期約減少疼痛指數0.4分(但無顯著差異)		⊕⊕⊕⊖ moderate ¹
	運動功能		⊕⊕⊕⊖ moderate ¹
	無顯著差異		
	生活品質		⊕⊕⊕⊖ moderate ¹
	無顯著差異		
壞處/風險	需麻醉下復位		⊕⊖⊖⊖ very low ^{4,13,14}
	連續被動式運動較少		
	不良事件		⊕⊕⊖⊖ low ^{1,3,4}
	連續被動式運動較少(無顯著差異)		



膝關節連續被動訓練器

發佈日期: 11/12/2018 作者: FAN CASSIA



膝關節連續被動訓練器

訓練範圍：-5°至115°

控制器類型：單鍵控制器

租賃天數：14日

單機租賃：7,000元

健康管理師到府指導方案：10,000元

成本分析-個人負擔

	機器租賃	到府指導	交通費	掛號費
費用	12000-15000/月	10000	200	400



您選擇治療方式的考量因素有什麼?以及在意的程度

考量因素	最不重要	影響程度				最重要
		0	1	2	3	
關節活動度	0	1	2	3	4	5
疼痛	0	1	2	3	4	5
生活品質	0	1	2	3	4	5
經濟考量	0	1	2	3	4	5

您對治療方式的認知有多少？

共享決策

1. 連續被動性運動可以改善關節活動：

對 不對 不確定

2. :連續被動性運動可以減輕疼痛

對 不對 不確定

3.連續被動性運動可以改按生活品質：

對 不對 不確定

您現在確認好治療方式了嗎？

我已經確認好想要的復健方式，我決定是否選擇 (下列擇一)

- 連續性被動運動
- 我目前還無法決定
- 我想要再與我的主治醫師討論我的決定
- 我想要再與其他人(包含配偶、家人、朋友或第二意見提供者...)討論我的決定。
- 對於以上的治療方式，我想要再瞭解更多，我的問題有:



了解病人主要問題

- 72歲盧媽媽接受全膝關節置換術後，是否需每天執行連續被動性運動



尊重病人治療意願

- 接受連續性被動性運動在其治療效果與花費上是否有幫助



Option



連續被動性運動
(CPM)

Benefit



關節活動度
疼痛
活動功能
生活品質
麻醉下復位
術後不良反應

Serious Harm



機器租賃費用
人力時間成本

臨床應用-回覆病人問題

醫療
現況

費用
資源

病人
偏好

利弊
平衡

盧媽媽您好，經過我們醫療團隊縝密的實證搜尋後，目前現有的醫學最佳證據是由系統性回顧文章支持，是否接受連續被動性運動對於關節活動度、疼痛、運動功能、生活品質均無顯著差異，您可接受一般術後復健照顧即可，考量到租賃機器成本，一般不需另行租賃機器回家。

薄弱建議