TIGHER

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臨床情境

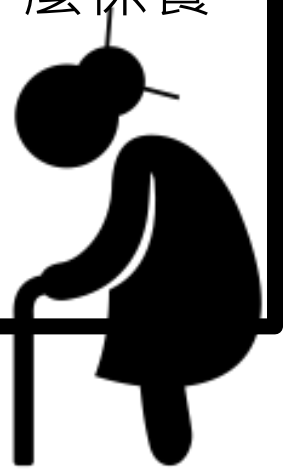
72歲的盧媽媽，近幾年膝蓋不適、走路、上下樓，甚至睡眠時也感到疼痛，醫師診斷為骨關節炎(osteorarthritis)，經醫師建議，決定行左側全膝關節置換術(total knee arthroplasty，TKA)。

術後住院期間依醫囑每天行兩次連續被動性運動(Continuous Passive Motion，CPM) 」，盧媽媽女兒問道:「我媽媽昨天才剛手術，傷口這麼大，而且還很痛，真的需要現在就做嗎?等恢復好一點，回家再開始做，可以嗎? 」

臨床情境

盧媽媽女兒問道:「我媽媽昨天才剛手術，傷口這麼大，而且還很痛，真的需要現在就做嗎?等恢復好一點，回家再開始做，可以嗎?」、「我媽媽開完刀回到病房就一直很痛，他年紀大了，怕止痛藥傷身，可以用電針(electro-acupuncture)或生理回饋(Bilfeedback)等方式來止痛嗎?

另外，家屬非常關心母親術後照護及復健，詢問:「需不需要租一台關節活動的機器(CPM)回家做運動?」盧媽媽也問說 ，「我之前有吃維骨力，要繼續吃嗎?還可以吃什麼保養關節?」



瞭解病人的主要問題

1. 需要術後立刻就做嗎?(CPM)
2. 可以用電針(electro-acupuncture)或生理回饋(Bilfeedback)等方式來止痛嗎?

尊重病人的治療意願

1. 希望可以用電針(electro-acupuncture)或生理回饋(Bilfeedback)等方式來止痛
2. 希望不要服用止痛藥，怕傷身

背景知識

DynaMed Powered by EBSCOhost

特性

1. 膝蓋骨關節炎
2. 常見於老年人

治療

1. 疼痛控制
2. 玻尿酸鈉關節注射
3. 手術

預防

1. 口服葡萄糖胺
2. 減重

根據臨床問題形成第一個PICO

	PICO/ 關鍵字	MeSH同義詞	中文關鍵字(繁/簡體)
P	• Total knee arthroplasty	• Total Knee Replacement	• 全膝蓋置換術
I	• Continuous Passive Motion	• CPM Therapy	• 連續被動性運動
C	• Analgesic agents	• Analgesics	• 藥物疼痛控制
O	• Joint Range of motion	• Joint Flexibility	• 關節活動範圍

☑治療/預防問題 ☐診斷型問題 ☐預後型問題 ☐傷害/病因型問題

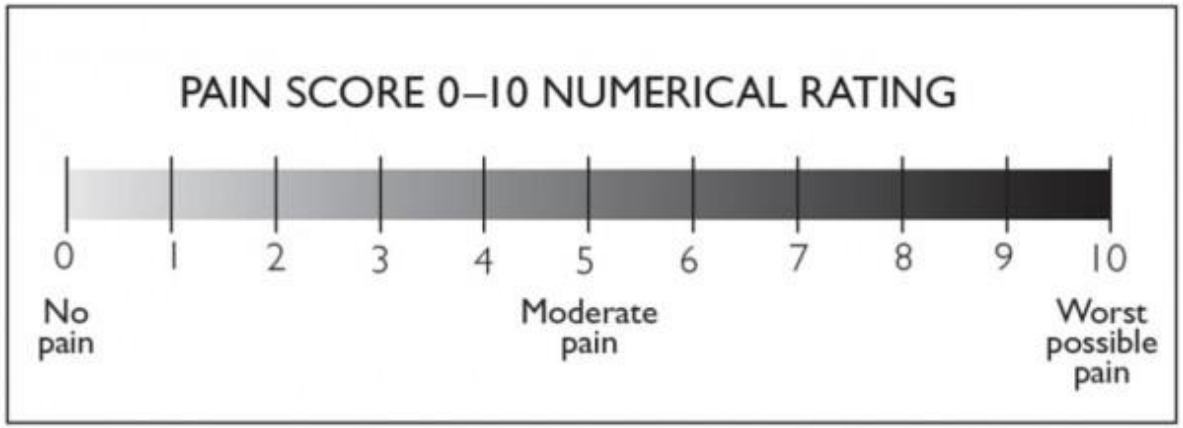
根據臨床問題形成第二個PICO

	PICO/ 關鍵字	MeSH同義詞	中文關鍵字(繁/簡體)
P	• Total knee arthroplasty	• Total Knee Replacement	• 全膝蓋置換術
I	• Biofeedback therapy	• Myofeedbacks	• 生理回饋
C	• Analgesic agents	• Without biofeedback intervention	• 藥物疼痛控制
O	• Visual Analogue Pain Rating Scale	• Visual Analog Scales	• 視覺類比疼痛量表

☑治療/預防問題 ☐診斷型問題 ☐預後型問題 ☐傷害/病因型問題

結果-測量指標

- numeric version of the visual analog scale



檢索策略-提升檢索效率

首先以『P』、『I』做搜尋，再依據結果適當加入關鍵字及同義詞

P	AND	I	AND	C	AND	O
Total knee arthroplasty OR Total Knee Replacement		Biofeedback therapy OR Myofeedbacks		Analgesic agents OR Without biofeedback intervention		Visual Analogue Pain Rating Scale OR Visual Analog Scales

限定搜尋範圍	Free full text、Within 5 years、Human species
限定研究類型	Systematic review、Meta-analysis、Randomized controlled trial
限定語言地區	English、中文[台灣本土文獻]

檢索策略-我們的主要目標

Clinical Queries

Systematic Review (**Meta-Analysis**)

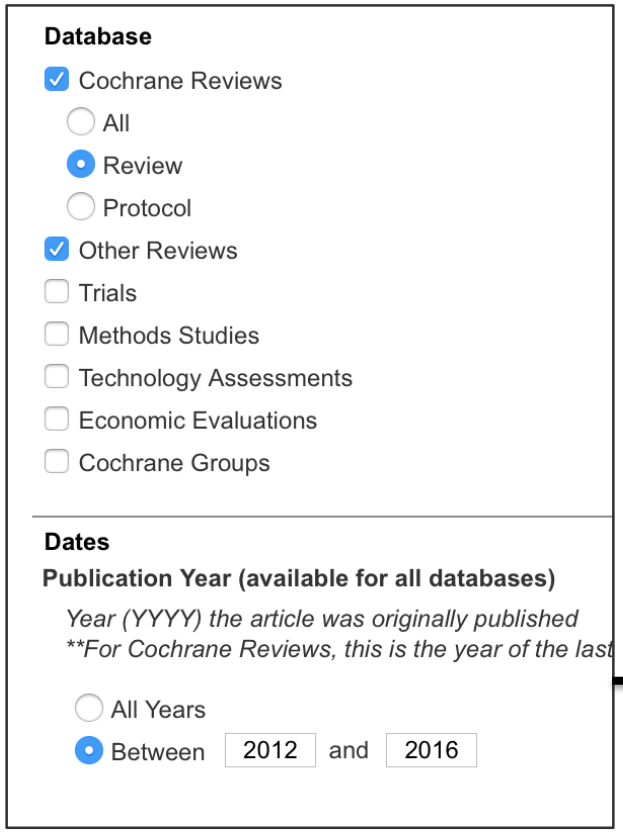
Randomized Controlled Trial/ Cohort Study

Within **5** Years

Meet our 『**PICO**』

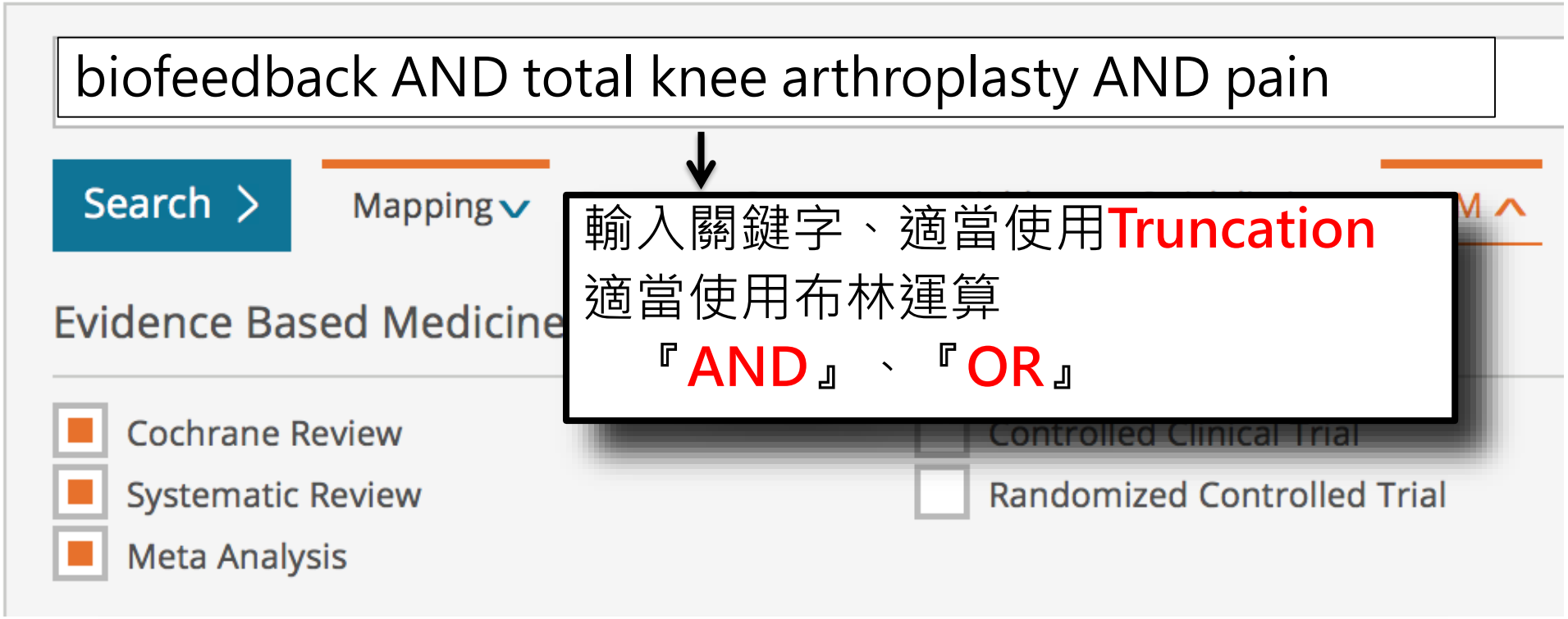
搜尋Cochrane Library-提升檢索效率

輸入關鍵字、適當使用Truncation*
適當使用布林運算
『AND』、『OR』



使用Limit功能
限定『Review』之文章
限定『2014-2018』文章

搜尋EMBASE-提升檢索效率

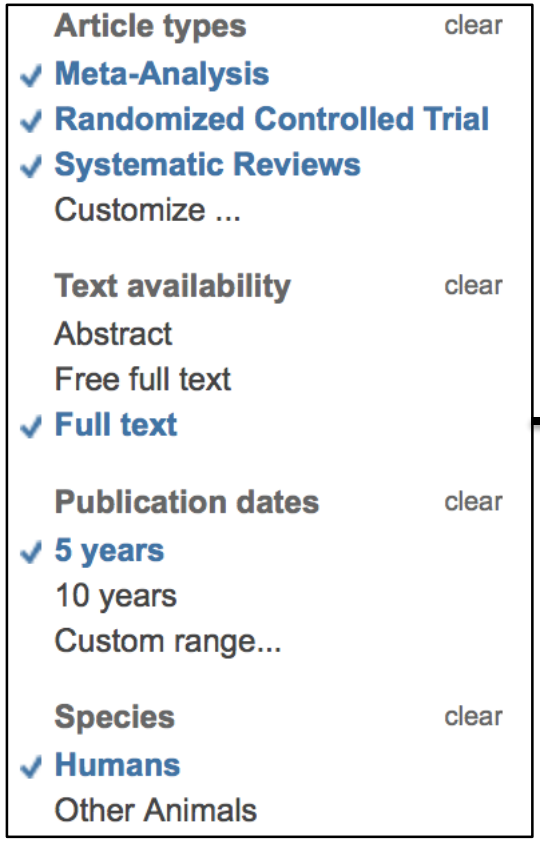


輸入關鍵字、適當使用Truncation
適當使用布林運算
『AND』、『OR』

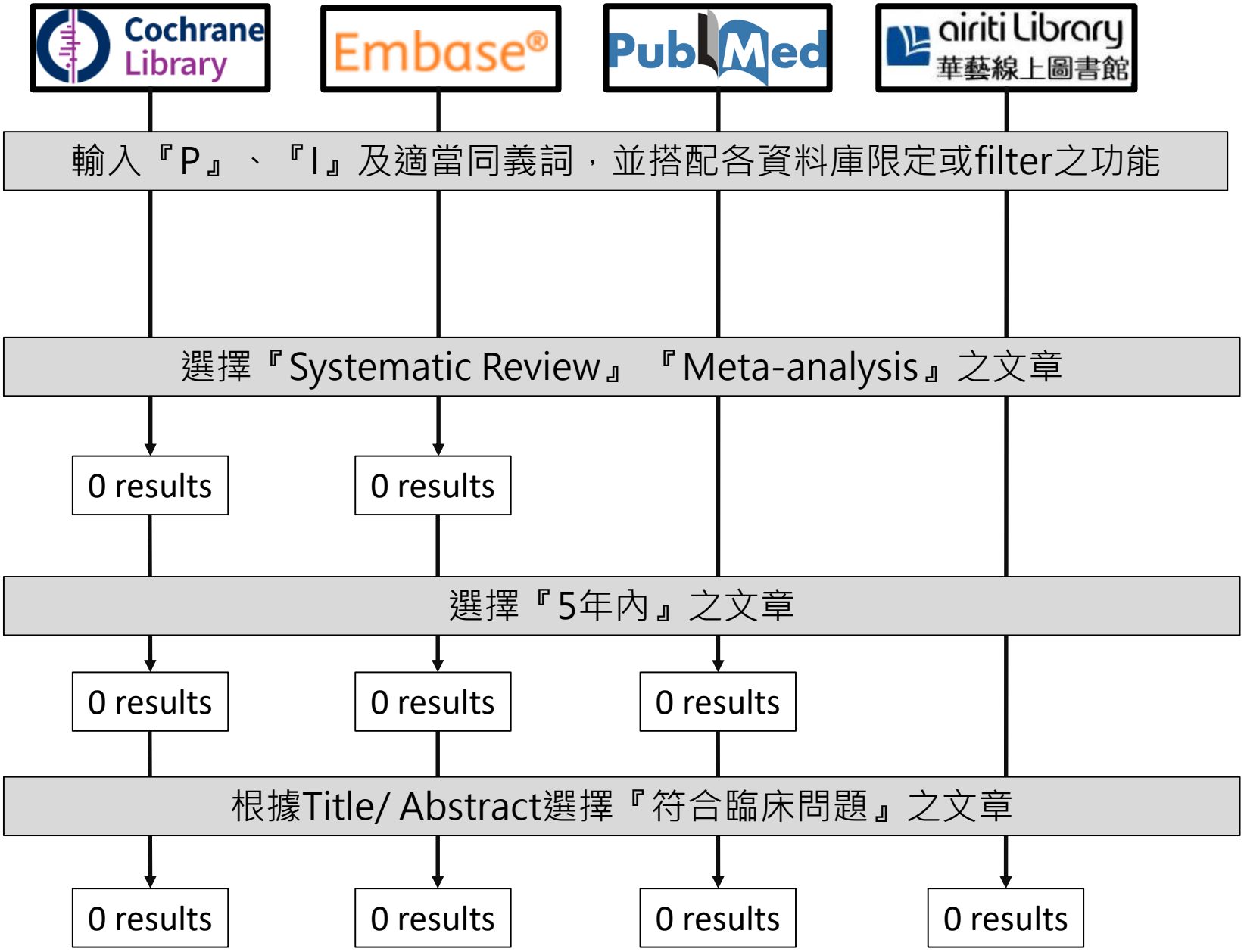
使用EBM Limit功能
限定『Systematic Review』、『Meta-analysis 』之文章
限定『2014-2018』文章

搜尋Pubmed-利用限定縮小檢索範圍

輸入關鍵字、適當使用Truncation
適當使用布林運算
『AND』、『OR』



限定適當文章類型
『Meta-Analysis』、『Systematic Reviews』
『Randomized Controlled Trial』
限定適當搜尋範圍
限定『5年』內之文章
限定『Full text』有全文可供評讀
限定『Humans』species


Cochrane Library
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輸入『P』、『I』及適當同義詞，並搭配各資料庫限定或filter之功能
選擇『Systematic Review』『Meta-analysis』之文章
0 results
0 results
選擇『5年內』之文章
0 results
0 results
0 results
根據Title/ Abstract選擇『符合臨床問題』之文章
0 results
0 results
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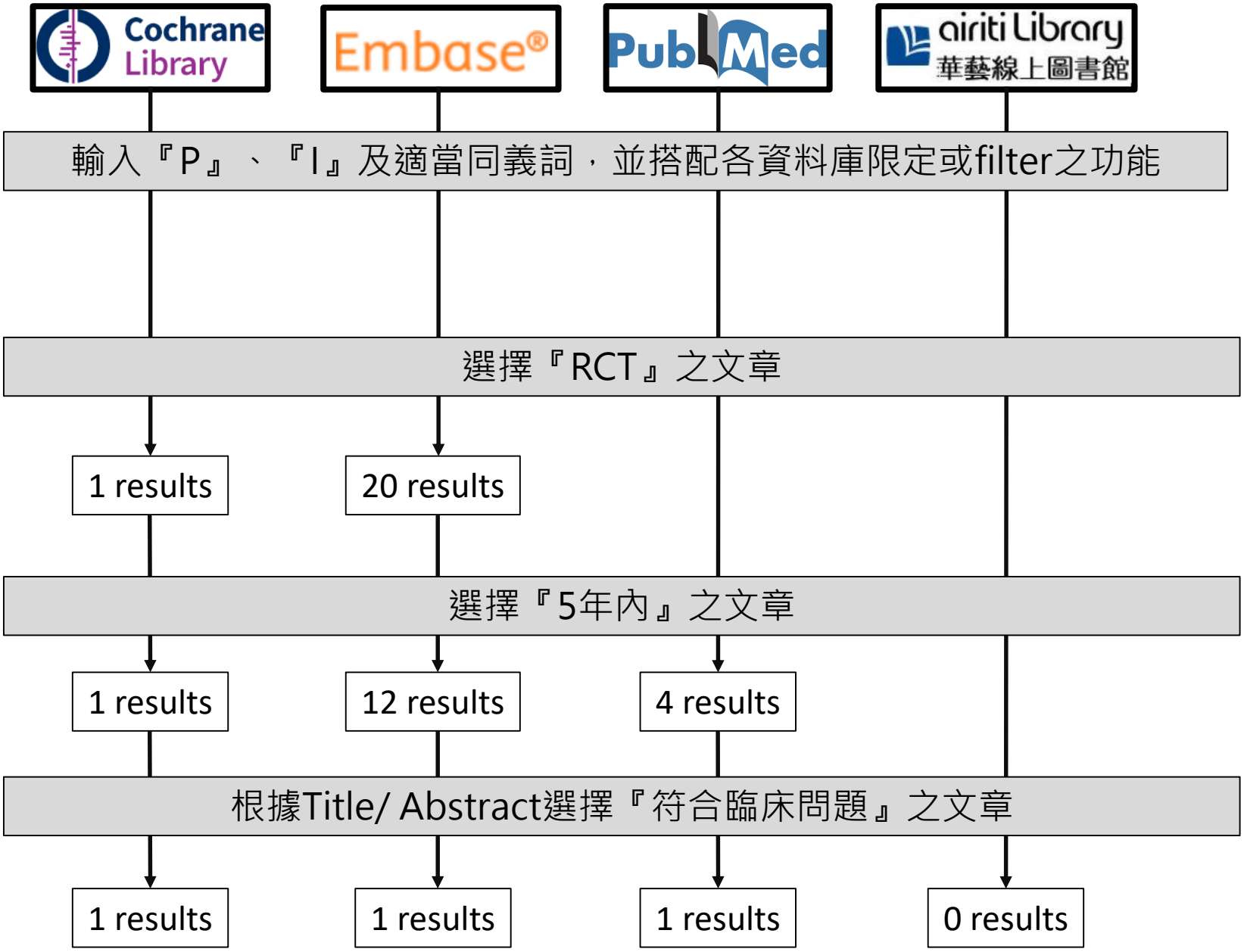
Cochrane Library
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PubMed
airiti Library 華藝線上圖書館
輸入『P』、『I』及適當同義詞，並搭配各資料庫限定或filter之功能
選擇『RCT』之文章
1 results
20 results
選擇『5年內』之文章
1 results
12 results
4 results
根據Title/ Abstract選擇『符合臨床問題』之文章
1 results
1 results
1 results
0 results

各資料庫收納結果

來　源	標　　題	年　份
Cochrane Library	**Biofeedback relaxation for pain associated with continuous passive motion in Taiwanese patients after total knee arthroplasty.**	2014
Embase	**Biofeedback relaxation for pain associated with continuous passive motion in Taiwanese patients after total knee arthroplasty.**	2014
PubMed	**Biofeedback relaxation for pain associated with continuous passive motion in Taiwanese patients after total knee arthroplasty.**	2014

比較收納文獻-選出最佳文獻，並提出我們的理由

Cochrane Library　Embase　PubMed

Biofeedback relaxation for pain associated with continuous passive motion in Taiwanese patients after total knee arthroplasty.[2014]

M	• Biofeedback relaxation	●
P	• Total knee arthroplasty	●
I	• Biofeedback therapy	●
C	• Analgesic agents	●
O	• Visual Analogue Pain Rating Scale	●
T	• Five days	●

收納文獻比較總整理-選出最佳文獻

收　納　文　章	M	P	I	C	O	T
Biofeedback relaxation for pain associated with continuous passive motion in Taiwanese patients after total knee arthroplasty.[2014]	●	●	●	●	●	●

嚴格評讀之文章及評讀工具

Biofeedback Relaxation for Pain Associated With Continuous Passive Motion in Taiwanese Patients After Total Knee Arthroplasty

Tsae-Jyy Wang, Ching-Fen Chang, Meei-Fang Lou, Man-Kuan Ao, Chiung-Chen Liu, Shu-Yuan Liang, Shu-Fang Vivienne Wu, Heng-Hsing Tung

Accepted 4 November 2014
DOI: 10.1002/nur.21633
Published online 30 December 2014 in Wiley Online Library (wileyonlinelibrary.com).

- ☑較新的發表年份
- ☑較高的證據等級
- ☑本土族群資料
- ☑最符合臨床情境

Impact factor:1.762

CASP [13.03.17]
Randomised Controlled Trial Checklist

Validity

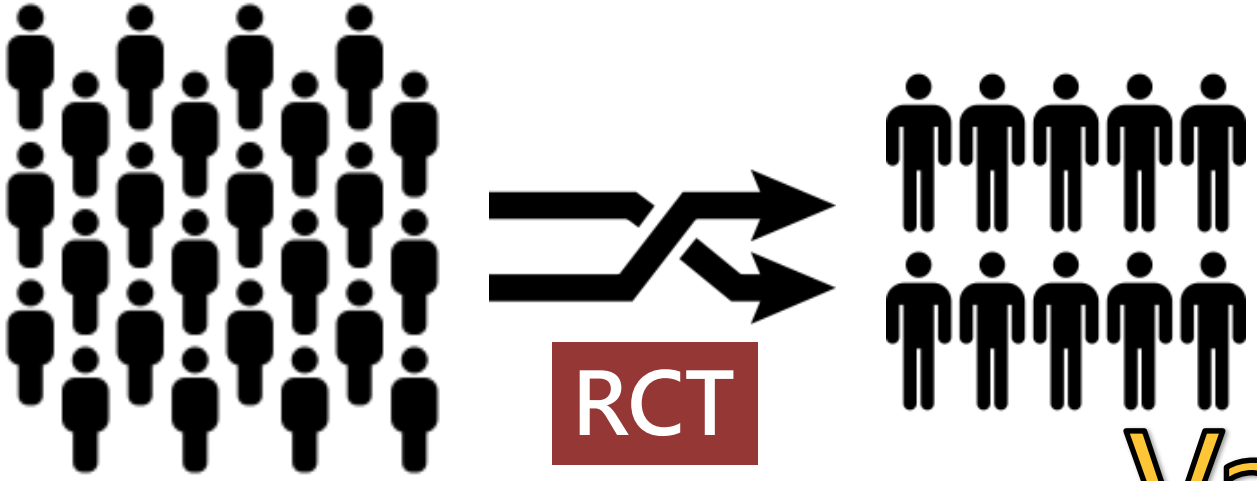
1. Did the trial address a clearly focused issue ?
   此試驗是否問了一個清楚、明確的臨床問題？

Abstract: Effective pain management is crucial for patient recovery after total knee arthroplasty (TKA). Biofeedback therapy, which encourages relaxation and helps alleviate various conditions associated with stress, may help to decrease postoperative pain in patients undergoing TKA. A quasi- experimental design was used to investigate the efficacy of a biofeedback relaxation intervention in reducing pain associated with postoperative continuous passive motion (CPM) therapy. Sixty-six patients admitted to a general hospital in Taiwan for TKA were recruited and randomly assigned to the intervention or control group. The intervention group received biofeedback training twice daily for 5 days, concurrent with CPM therapy, whereas the control group did not receive the biofeedback intervention. Pain was measured using a numeric rating scale before and after each CPM therapy session on postoperative days 1 through 5. The CPM-elicited pain score was calculated by subtracting the pre-CPM pain score from the post-CPM pain score. Results of repeated-measures analysis of variance showed intervention group reported significantly less pain caused by CPM than did the control group ($f = 29.70$, $p < 0.001$).

評讀結果

P	Total knee arthroplasty(TKA)
I	Biofeedback therapy
C	Analgesic agents(without biofeedback intervention)
O	VAS score(Pain)
T	2015

☑Yes ☐ No ☐ Unclear



Validity

2. Was the assignment of patients to treatments randomised?
此研究是否適當地隨機分派病患？

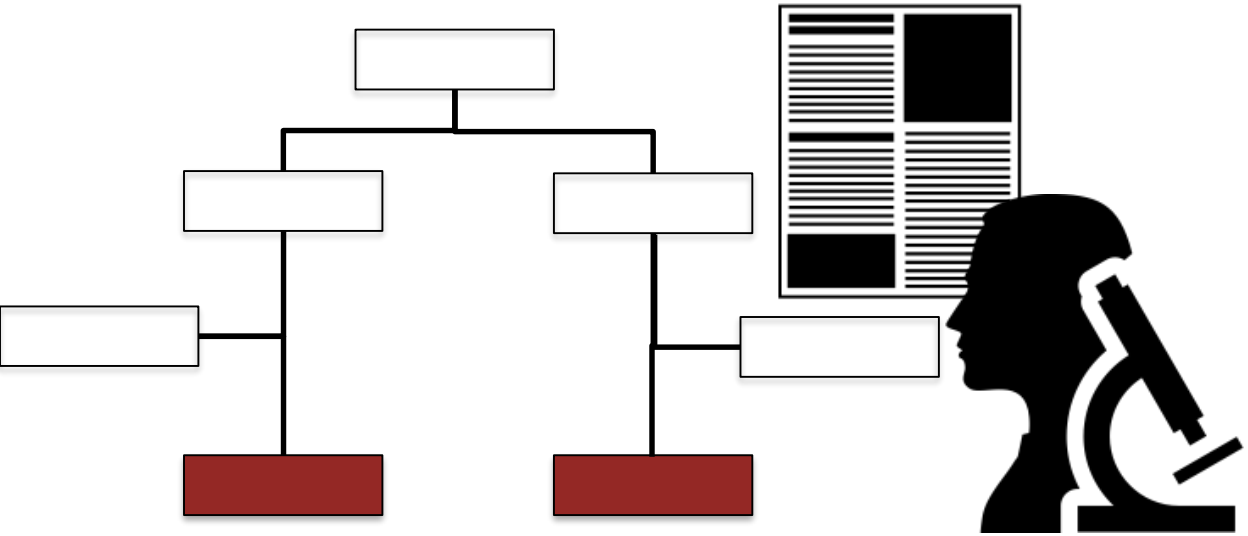
評讀結果

Method

Design

This study used a quasi-experimental design with repeated measures. A convenience sample of 66 patients undergoing primary total knee replacement were recruited and randomly assigned to the intervention or control groups. Institutional Review Board approval was obtained from the Cheng Hsin General Hospital (IRB No. 98A-21–1).

☐Yes ☐ No ☑ Unclear

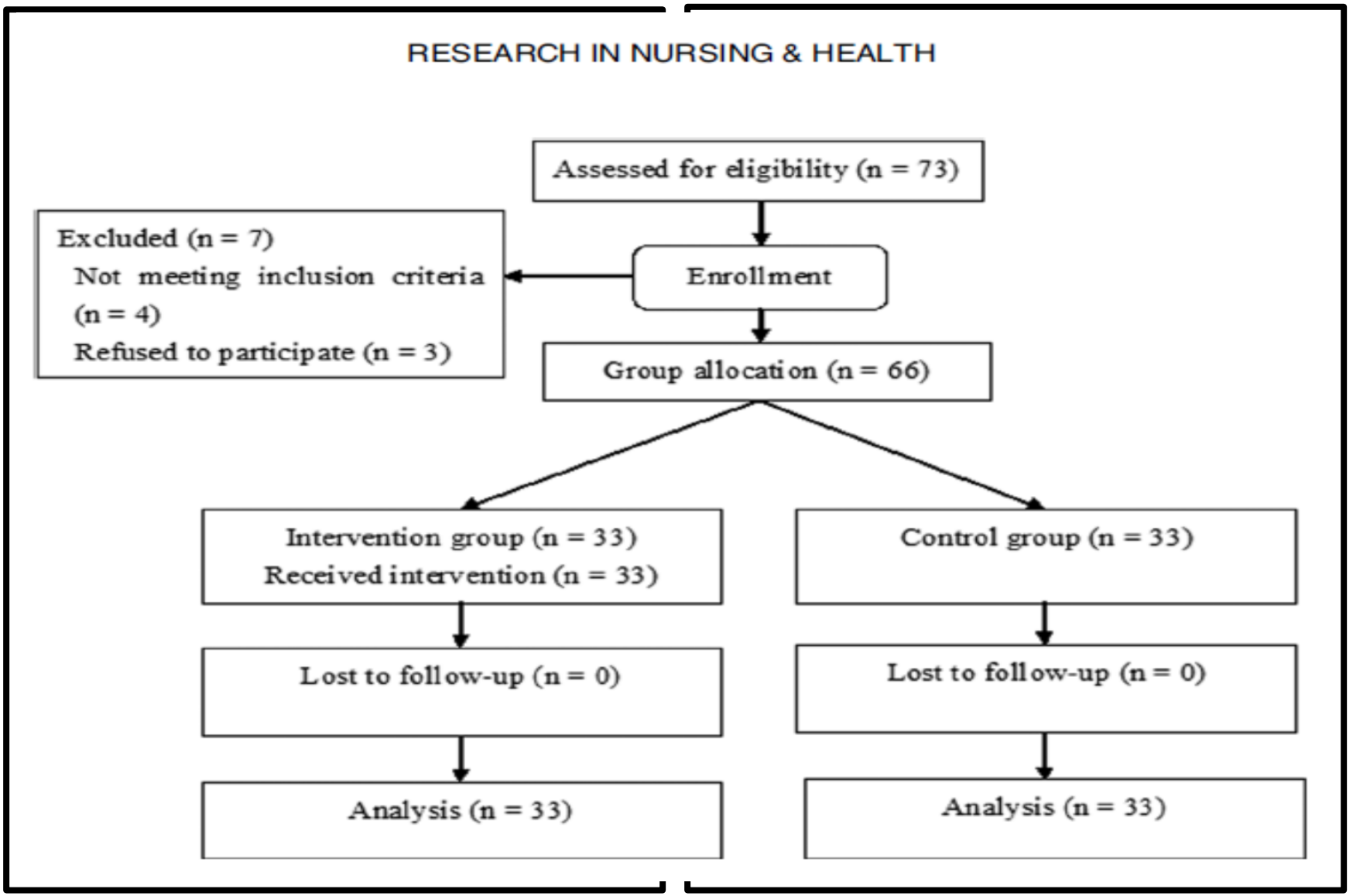


Validity

3. Were all of the patients who entered the trial properly accounted for at its conclusion?

是否所有的病患都有納入結果中去分析？

評讀結果



☑Yes ☐ No ☐ Unclear

RCT

Validity

4. Were patients, health workers and study personnel ‘blind’ to treatment?

病患、醫療人員、研究人員是否皆為盲性的?

評讀結果

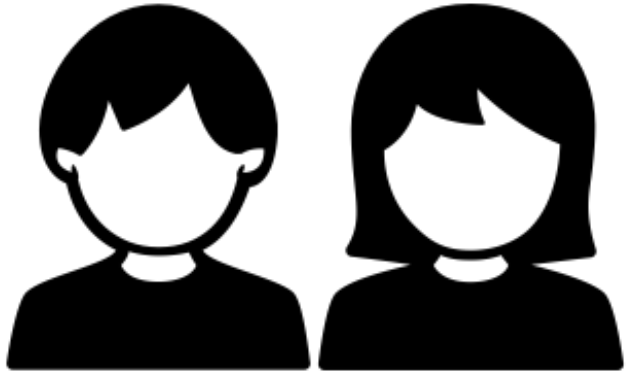
Patients with osteoarthritis admitted for TKA were recruited from orthopedic wards of a 1000-bed general hospital in Taipei, Taiwan. The study was approved by the research ethics committee of the medical center. Potential participants were referred by their surgeons and then contacted and screened by the researcher to determine their eligibility. Patients who met the following inclusion criteria were solicited: 25 years of age or older, diagnosed with knee osteoarthritis, admitted to the hospital for a primary TKA, and able to communicate in Mandarin or Taiwanese dialect. Patients with cognitive problems and those experiencing complications from TKA were excluded from the study.

色

構

性別

☐Yes ☑ No ☐ Unclear



Validity

5. Were the groups similar at the start of the trial?
隨機分派後的兩組病患的特徵是否相似？

評讀結果

Table 1. Participant Demographics and Disease Characteristics by Group ($N = 66$)

Characteristic	Intervention ($n = 33$)		Control ($n = 33$)			
	Mean	*SD*	Mean	*SD*	t^a	*p*
Age	73.5	9.5	71.7	6.5	0.9	0.378
Years since diagnosis with knee OA	3.3	3.6	4.3	4.8	488.5	0.465
BMI (Kg/m^2)	27.4	4.5	27.8	4.6	519.0	0.744
	n	%	*n*	%	χ^{2b}	
Gender						
Male	12	36.4	11	33.3	0.07	0.796
Female	21	63.6	22	66.7		
Education						
Unable to read or write	6	18.2	11	33.3	5.47	0.242
Elementary school	12	36.4	15	45.5		
Middle school	5	15.2	3	9.1		
High school	5	15.2	3	9.1		
College or University	5	15.2	1	3.0		
Marital status						
Married	33	100.0	32	97.0	1.02	1.000
Single	0	0.0	1	3.0		
Employment status						
Unemployed	32	97.0	32	97.0	0.00	1.000
Employed	1	3.0	1	3.0		
Duration of CPM therapy						
3 days	2	6.1	0	0.0	2.48	0.289
4 days	2	6.1	1	3.0		
5 days	29	87.9	32	97.0		
Length of CPM sessions						
30 minutes	32	97.0	30	90.9	1.07	0.307
Ever less than 30 minutes	1	3.0	3	9.1		

☑Yes ☐ No ☐ Unclear

Validity

6. Aside from the experimental intervention, were the groups treated equally?
除了研究介入的差別，兩組間其他的治療是否相等?

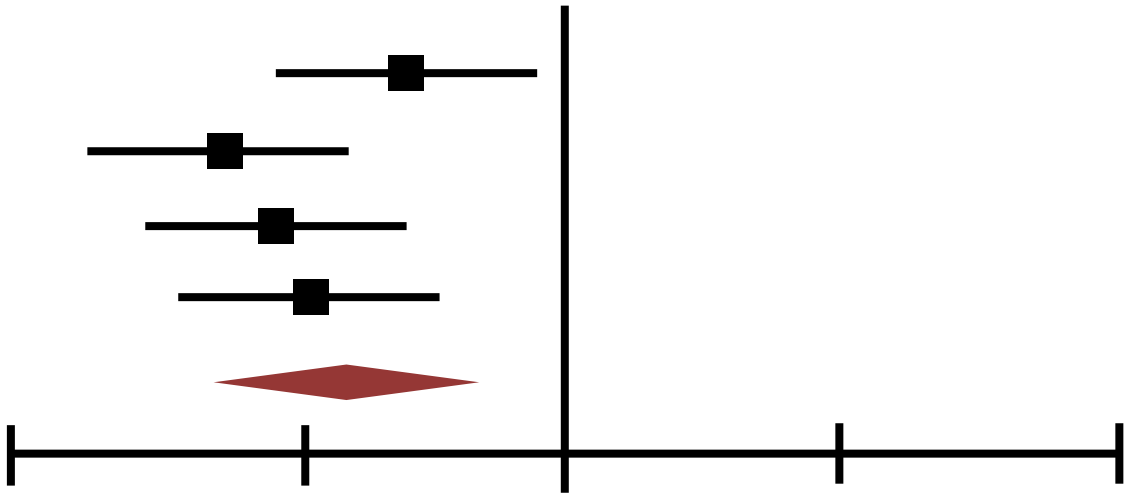
	實驗組	對照組
CPM therapy	+	+
Begin 1st day	+	+
Pain killer	routine	routine
Biofeedback	+	-

評讀結果

優點

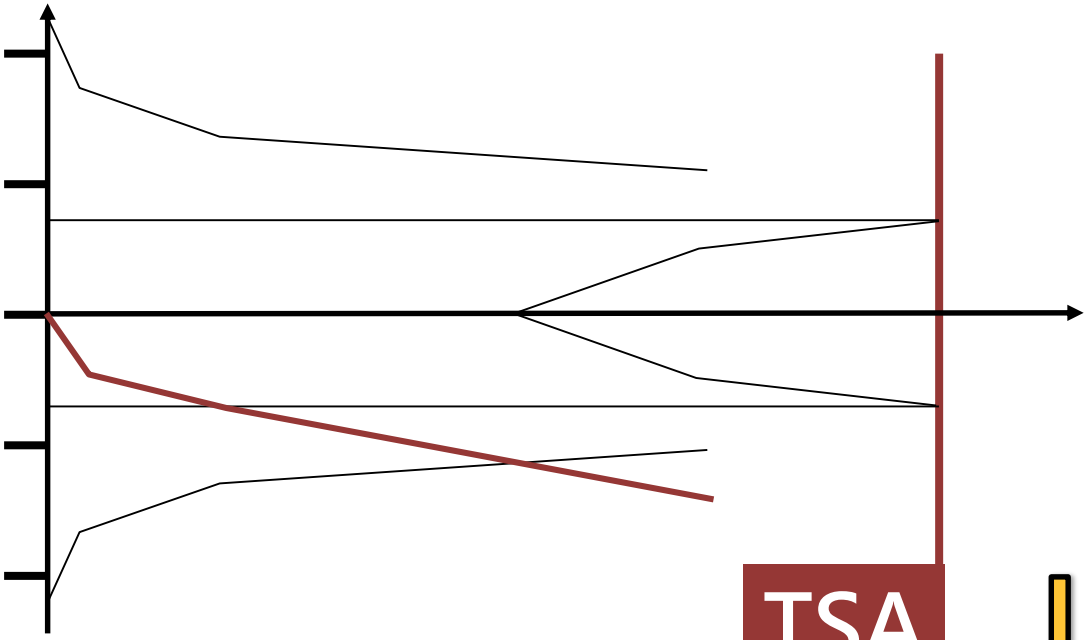
1. 因除了兩組生理回饋治療的不同，**其他治療在兩組均相同**，

☑Yes ☐ No ☐ Unclear



Importance

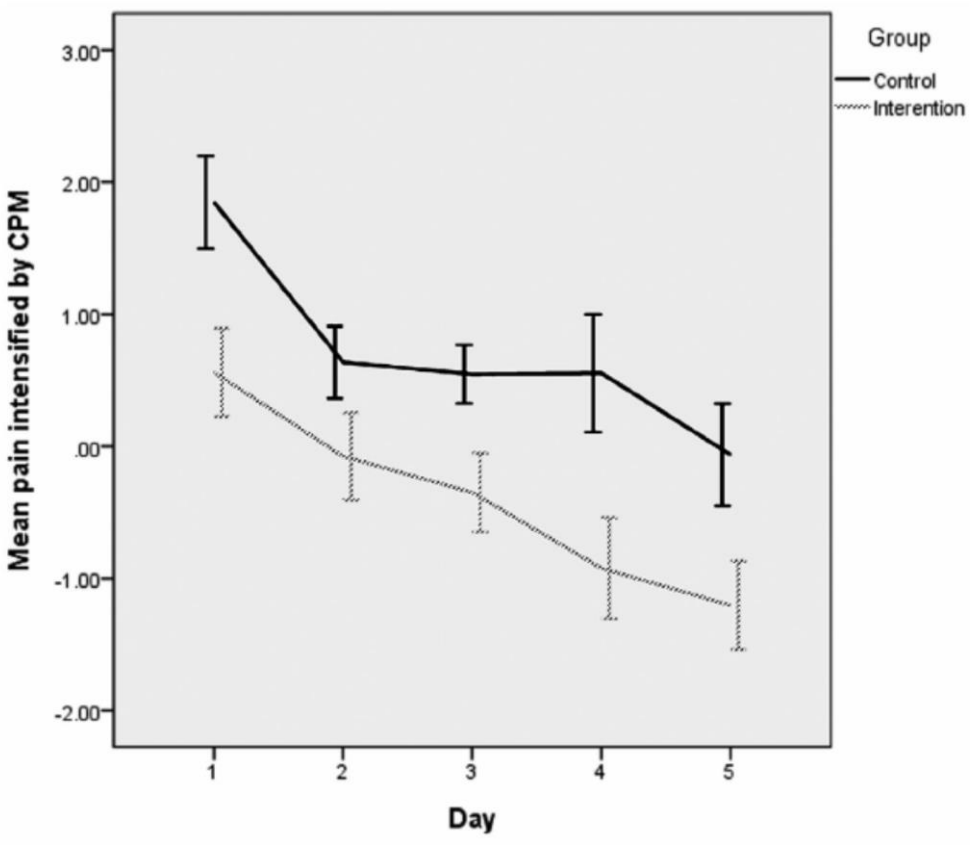
7. How large was the treatment effect?
介入的治療效果有多大？



Importance

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

主要結果



評讀結果

Comparison	Biofeedback with/without
Duration	5 Days
Conclusion	BIofeedback，可有效減緩術後疼痛，且達統計上顯著差異

Practice

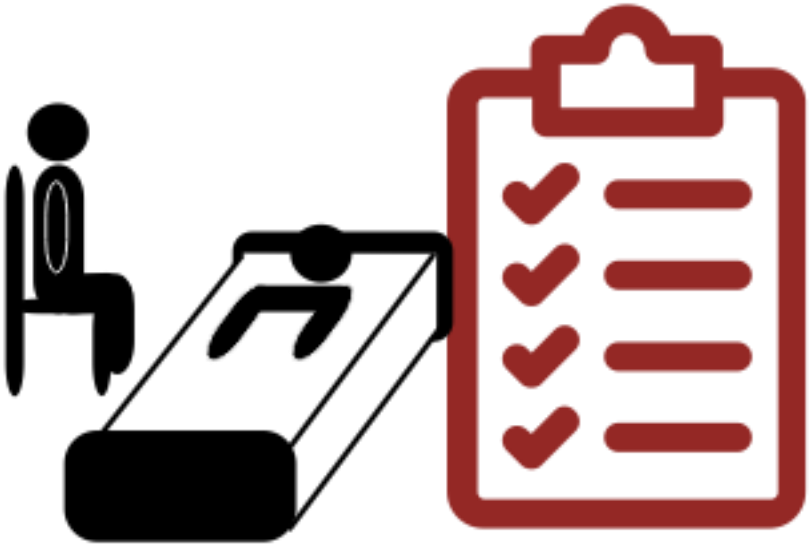
9. Can the results be applied to the local population?
此研究是否可應用到你的病患？

評估適用性-比較評讀文獻及臨床情境

	評讀文獻	臨床情境
P	Total knee arthroplasty	Total knee arthroplasty
I	Biofeedback intervention	Biofeedback intervention
C	Without biofeedback	Without biofeedback
O	VAS score	VAS score

1. 我們的病患與文獻研究是否相似？ ☑年齡 ☑性別 ☑種族 ☑共病 ☑同時服用其他治療藥物 ☑疾病嚴重度	是
2. 這項治療在台灣是否可行？	可

☑Yes ☐ No ☐ Unclear



Practice

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

	重要臨床結果	評讀之文獻
Efficacy	VAS score	✓

☑Yes

Practice

11. 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？

成本效益-藥價、藥效

Reference:
衛生福利部中央健康保險署
NATIONAL HEALTH INSURANCE ADMINISTRATION,MINISTRY OF HEALTH AND WELF

輔具	優點	缺點(副作用)	補助後單價
	• 可租用回家	• 無	各縣市不等 約NT.100~500 元

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 *n*-of-1 trials	Randomized trial or observational study with dramatic effect	Non-randomized controlled cohort/follow-up study**	ase-series, case-control s ies, or historically ontr lled studies**	Mechanism-based reasoning
What are the COMMON harms? (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, *n*-of-1 trial with the patient you a raising the question about, or observational study with drama effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Non-randomized controlled cohort/follow-up study (post-marketing s rveillance) provided there are sufficient numbe s to rule out a	Case series, case-control, or hi torically controlled studies**	Mechanism-based reasoning
What are the RARE harms? (Treatment Harms)	Systematic review of randomize trials or *n*-of-1 trial				
Is this (early detection) test worthwhile? (Screening)	Systematic review of randomize trials				ed

【治療型問題】

RCT之證據等級為『Level 2』

※考量研究之瑕疵，故降階為 **Level 3**

考慮降階之理由

- ☑ 樣本數太小
- ☐ 絕對效果小
- ☐ PICO和臨床情境不相符
- ☐ 證據間沒有一致性
- ☐ 研究不精確(95%CI過大)

臨床應用-回覆病人問題

您好，根據2018年衛福部統計，國人膝關節退化率約15%，有骨科醫師估算，正巧和65歲以上人口一致，因本土年長者常飽受膝關節退化之苦，經過我們專業團隊的實證查證，目前最新研究文章為2016年台灣醫學中心隨機分派試驗，目前的研究結果顯示生理回饋對於控制連續被動性運動治療期間的術後疼痛是安全有效的， 對於人體也沒有不良反應，是一種非侵入性的，低成本高效益的術後疼痛治療方案， 綜合實證醫學、您的價值偏好、療效及風險，我們強烈建議您可以選擇生理回饋治療方法來止痛。

除此之外，術後平日需注意抬高患肢，但不可將枕頭放在膝下，保持傷口清潔及乾燥，透過復健來維持與加強肌力，並採漸進式增加膝關節彎曲度。飲食方面以及高蛋白、高鐵、高鈣飲食，才能有效的保養膝關節，避免再次損傷。

感謝各位評審聆聽！