LECTURA CRÍTICA DE UNA REVISIÓN SISTEMÁTICA

Klgo. Alvaro Besoaín Saldaña
Departamento de Kinesiología
Facultad de Medicina
Universidad de Chile

INTRODUCCIÓN

Las revisiones sistemáticas (RS) nos permiten estar al día en diversos temas de interés, sin invertir demasiado tiempo; sin embargo, no siempre este tipo de estudio se asocia a un nivel de evidencia 1, garantiza validez o veracidad, calidad metodológica, y confiabilidad o reproducibilidad de resultados.

Por otra parte, hay que recordar que existen RS cuya población a estudio son ensayos clínicos (EC) con asignación aleatoria, que posiblemente determinan nivel de evidencia 1a; sin embargo, existen también RS cuya población a estudio son EC de mala calidad, estudios de cohortes u otros estudios observacionales; en estos últimos casos el nivel de evidencia es obviamente menor; situación que puede confundir a los lectores si es que no consideran algunos de estos detalles en el momento de leer estos artículos.

Diferencias entre revisiones narrativas y sistemáticas

Característica	Revisión narrativa	Revisión sistemática
Pregunta de interés	No estructurada, no específica	Pregunta estructurada, problema clínico bien delimitado
Búsqueda de artículos y sus fuentes	No detallada y no sistemática	Búsqueda estructurada y explícita
Selección de artículos de interés	No detallada y no reproducible	Selección basada en criterios explícitos uniformemente aplicados a todos los artículos
Evaluación de la calidad de la información	Ausente	Estructurada y explícita
Síntesis	A menudo resumen cualitativo	Resumen cualitativo y cuantitativo
Inferencias	A veces basadas en la evidencia	Normalmente basadas en la evidencia

TIPO DE REVISIÓN

DIFERENCIACIÓN RELEVANTE EN LA REVISIÓN SISTEMÁTICA

Síntesis Cualitativa

- Tablas
- Resumen de la información

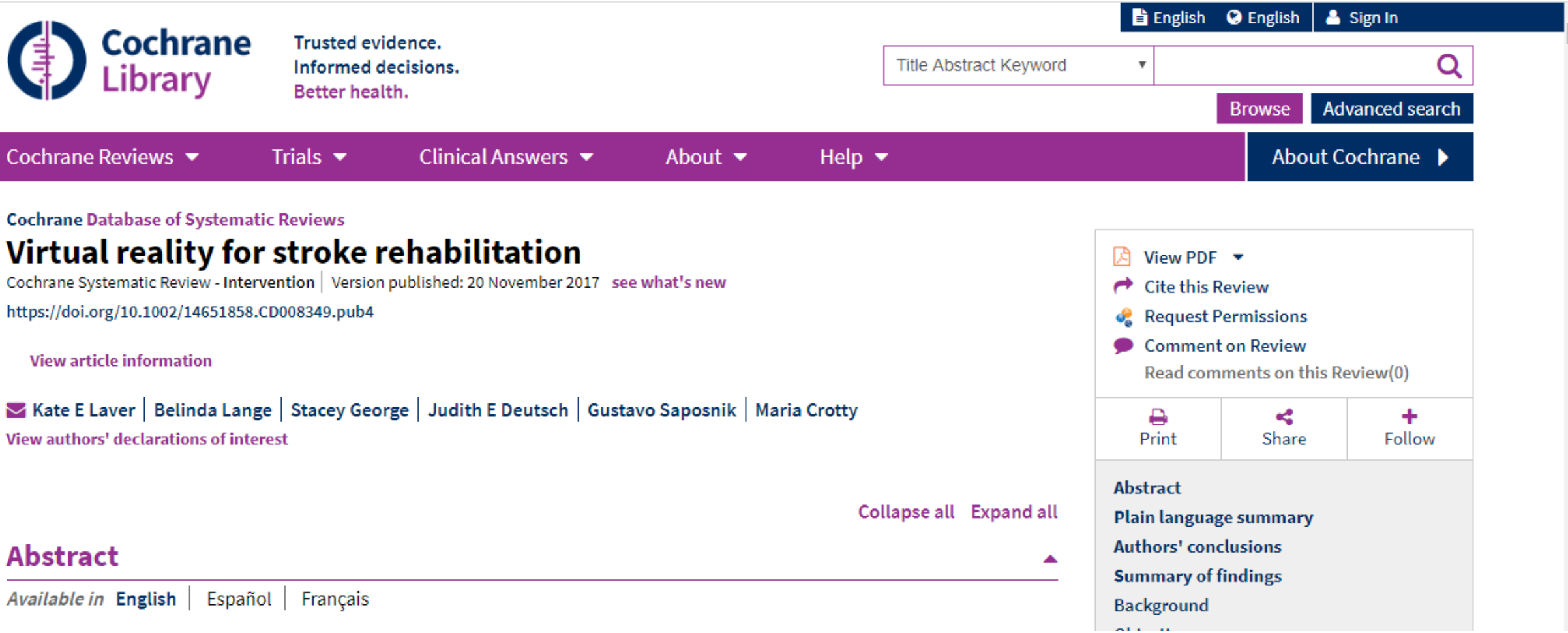
Síntesis Cuantitativa

- Meta-análisis
- Resumen matemático de lo entregado

ETAPAS DE UNA REVISIÓN SISTEMÁTICA

- Definición de la pregunta clínica de interés y los criterios de inclusión y exclusión de los estudios.
- Localización y selección de los estudios relevantes.
- Extracción de datos de los estudios primarios.
- Análisis y presentación de los resultados.
- Interpretación de los resultados

PASO 1. LEER A CABALIDAD NOMBRES Y RESUMEN DE LA REVISIÓN



PORTADA

Cochrane Library

Cochrane Database of Systematic Reviews

Virtual reality for stroke rehabilitation (Review)

Laver KE, Lange B, George S, Deutsch JE, Saposnik G, Crotty M

Cochrane Library

Trusted evidence.
Informed decisions.
Better health.

Cochrane Database of Systematic Reviews

TABLE OF CONTENTS

PASO 2. ACCEDER A LA REVISIÓN

El indice es el major orientador

ACCESO A DATOS DE AUTORES(AS)

Cochrane Library
Trusted evidence.
Informed decisions.
Better health.

Cochrane Database of Systematic Reviews

[Intervention Review]

Virtual reality for stroke rehabilitation

Kate E Laver[1], Belinda Lange[2], Stacey George[1], Judith E Deutsch[3], Gustavo Saposnik[4], Maria Crotty[1]

[1]Department of Rehabilitation, Aged and Extended Care, Flinders University, Adelaide, Australia. [2]School of Health Sciences, Discipline of Physiotherapy, Flinders University, Adelaide, Australia. [3]Department of Rehabilitation and Movement Science, Rutgers University, Newark, New Jersey, USA. [4]Department of Medicine (Neurology), St Michael's Hospital, University of Toronto, Toronto, Canada

Contact address: Kate E Laver, Department of Rehabilitation, Aged and Extended Care, Flinders University, Level 1, C Block, Repatriation General Hospital, Daws Road, Daw Park, Adelaide, South Australia, 5041, Australia. kate.laver@flinders.edu.au.

Editorial group: Cochrane Stroke Group
Publication status and date: Edited (no change to conclusions), published in Issue 1, 2018.

Citation: Laver KE, Lange B, George S, Deutsch JE, Saposnik G, Crotty M. Virtual reality for stroke rehabilitation. *Cochrane Database of Systematic Reviews* 2017, Issue 11. Art. No.: CD008349. DOI: 10.1002/14651858.CD008349.pub4.

LEER RESUMEN EN DETALLE

ABSTRACT

Background

Virtual reality and interactive video gaming have emerged as recent treatment approaches in stroke rehabilitation with commercial gaming consoles in particular, being rapidly adopted in clinical settings. This is an update of a Cochrane Review published first in 2011 and then again in 2015.

Objectives

Primary objective: to determine the efficacy of virtual reality compared with an alternative intervention or no intervention on upper limb function and activity.

Secondary objectives: to determine the efficacy of virtual reality compared with an alternative intervention or no intervention on: gait and balance, global motor function, cognitive function, activity limitation, participation restriction, quality of life, and adverse events.

Search methods

We searched the Cochrane Stroke Group Trials Register (April 2017), CENTRAL, MEDLINE, Embase, and seven additional databases. We also searched trials registries and reference lists.

Selection criteria

Randomised and quasi-randomised trials of virtual reality ("an advanced form of human-computer interface that allows the user to 'interact' with and become 'immersed' in a computer-generated environment in a naturalistic fashion") in adults after stroke. The primary outcome of interest was upper limb function and activity. Secondary outcomes included gait and balance and global motor function.

Data collection and analysis

Two review authors independently selected trials based on pre-defined inclusion criteria, extracted data, and assessed risk of bias. A third review author moderated disagreements when required. The review authors contacted investigators to obtain missing information.

Main results

We included 72 trials that involved 2470 participants. This review includes 35 new studies in addition to the studies included in the previous version of this review. Study sample sizes were generally small and interventions varied in terms of both the goals of treatment and the virtual reality devices used. The risk of bias present in many studies was unclear due to poor reporting. Thus, while there are a large number of randomised controlled trials, the evidence remains mostly low quality when rated using the GRADE system. Control groups usually received no intervention or therapy based on a standard-care approach. Primary outcome: results were not statistically significant for

RESUMEN PARA LA COMUNIDAD

PLAIN LANGUAGE SUMMARY

Virtual reality for stroke rehabilitation

Review question
We wanted to compare the effects of virtual reality versus an alternative treatment or no treatment on recovery after stroke using arm function and other outcomes such as walking speed and independence in managing daily activities after stroke.

Background
Many people after having a stroke have difficulty moving, thinking, and sensing. This often results in problems with everyday activities such as writing, walking, and driving. Virtual reality and interactive video gaming are types of therapy being provided to people after having a stroke. The therapy involves using computer-based programs designed to simulate real life objects and events. Virtual reality and interactive video gaming may have some advantages over traditional therapy approaches as they can give people an opportunity to practise everyday activities that are not or cannot be practised within the hospital environment. Furthermore, there are several features of virtual reality programs that might mean that patients spend more time in therapy: for example, the activity might be more motivating.

Study characteristics
We identified 72 studies involving 2470 people after stroke. A wide range of virtual reality programs were used, with most aimed to improve either arm function or walking ability. The evidence is current to April 2017.

Key results
Twenty-two trials tested whether the use of virtual reality compared with conventional therapy resulted in an improved ability to use one's arm and found that the use of virtual reality did not result in better function (low-quality evidence). When virtual reality was used in addition to usual care or rehabilitation to increase the amount of time the person spent in therapy there were improvements in the functioning of the arm (low-quality evidence). Six trials tested whether the use of virtual reality compared with conventional therapy resulted in improved walking speed. There was no evidence that virtual reality was more effective in this case (low-quality evidence). Ten trials found that there was some evidence that virtual reality resulted in a slightly better ability to manage everyday activities such as showering and dressing (moderate-quality evidence). However, these positive effects were found soon after the end of the treatment and it is not clear whether the effects are long lasting. Results should be interpreted with caution as, while there are a large number of studies, the studies are generally small and not of high quality. A small number of people using virtual reality reported pain, headaches, or dizziness. No serious adverse events were reported.

Quality of the evidence
The quality of the evidence was generally of low or moderate quality. The quality of the evidence for each outcome was limited due to small numbers of study participants, inconsistent results across studies, and poor reporting of study details.

SINTESIS CUALITATIVA

SUMMARY OF FINDINGS

Summary of findings for the main comparison. Virtual reality compared to conventional therapy for stroke rehabilitation

Virtual reality compared to conventional therapy for stroke rehabilitation

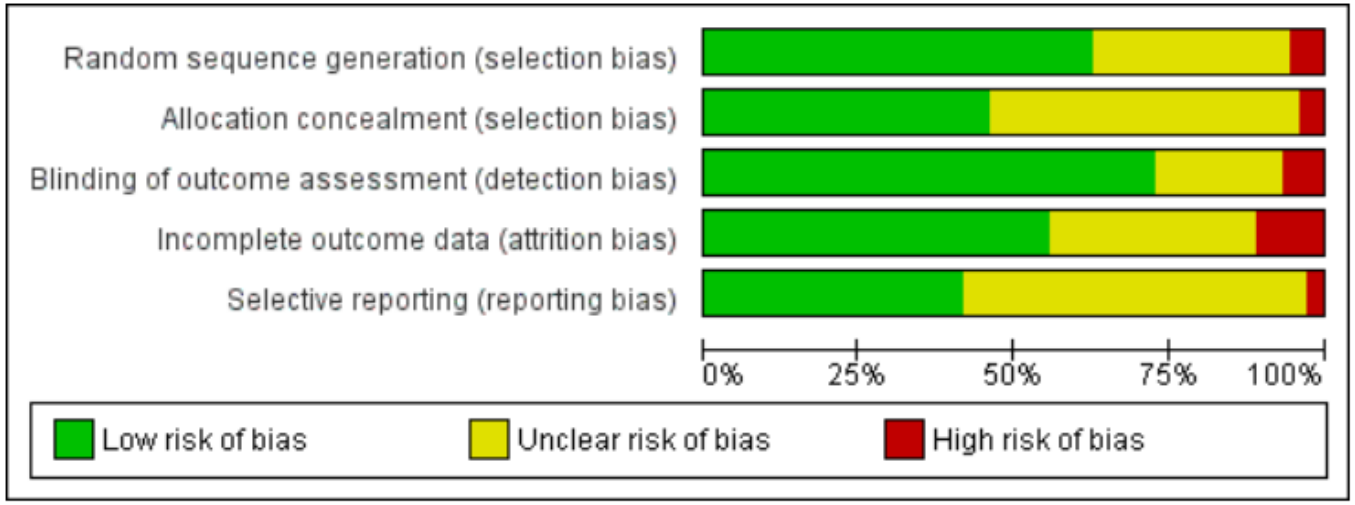
Patient or population: people receiving stroke rehabilitation
Settings: hospital, clinic or home
Intervention: virtual reality

Comparison: conventional therapy

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	Virtual reality				
Upper limb function	Same dose of conventional therapy	The mean upper limb function in the intervention groups was **0.07 standard deviations higher** (-0.05 to 0.20 higher)		1038 (22 studies)	⊕⊕⊝⊝ **low**[1,2,3]	No statistically significant difference between groups
Quality of life	Same dose of conventional therapy	No significant benefit found on total score of the SF-36		300 (3 studies)	⊕⊕⊝⊝ **low**[1,2,4]	Studies could not be pooled. None of the 3 studies found significant differences between groups in total score. 2 studies reported significant differences in domains of the SF36
Gait speed	Same dose of conventional therapy	The mean gait speed in the intervention groups was **0.09 metres per second faster** (0.04 lower to 0.22 higher)		139 (6 studies)	⊕⊕⊝⊝ **low**[1,3,4]	No statistically significant difference between groups
ADL outcome	Same dose of conventional therapy	The mean ADL outcome in the intervention groups was **0.25 standard deviations higher** (0.06 to 0.43 higher)		466 (10 studies)	⊕⊕⊕⊝ **moderate**[1]	Small effect in favour of those receiving virtual reality intervention

SÍNTESIS DE RIESGOS DE SESGO

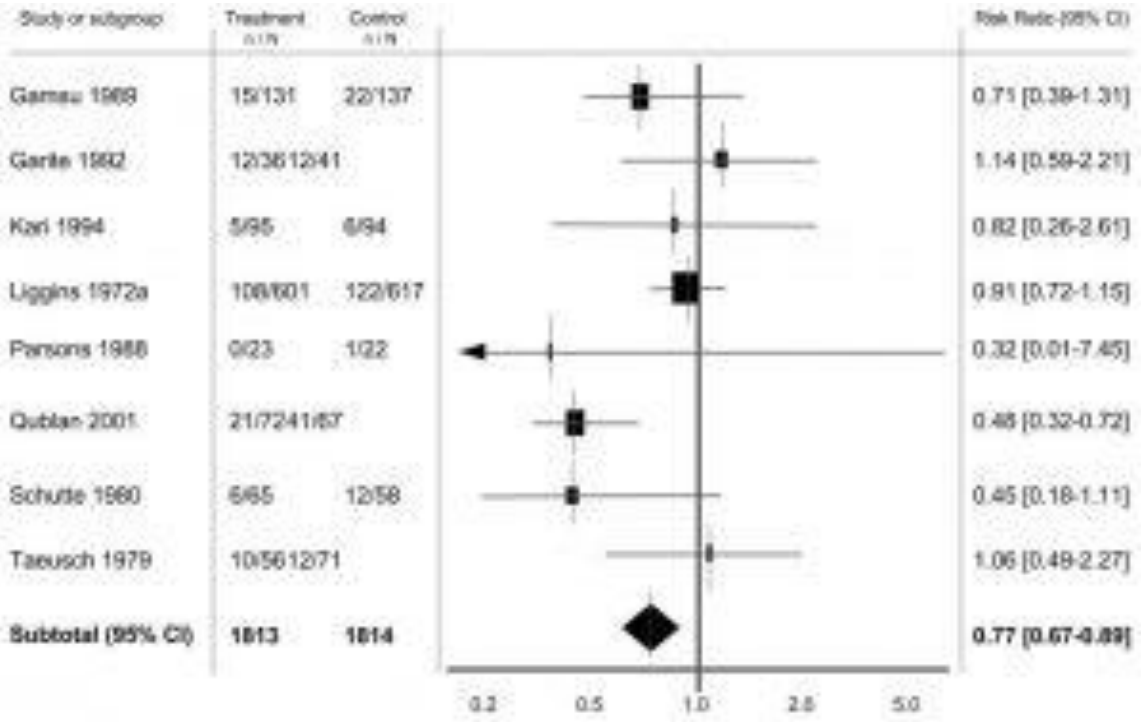
Figure 3. Methodological quality graph: review authors' judgements about each methodological quality item presented as percentages across all included studies



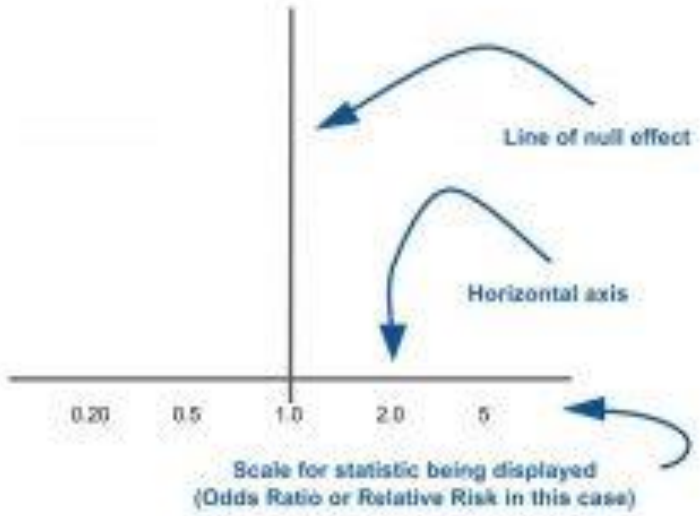
SÍNTESIS CUANTITATIVA

¿Cómo leer un gráfico de bosque?

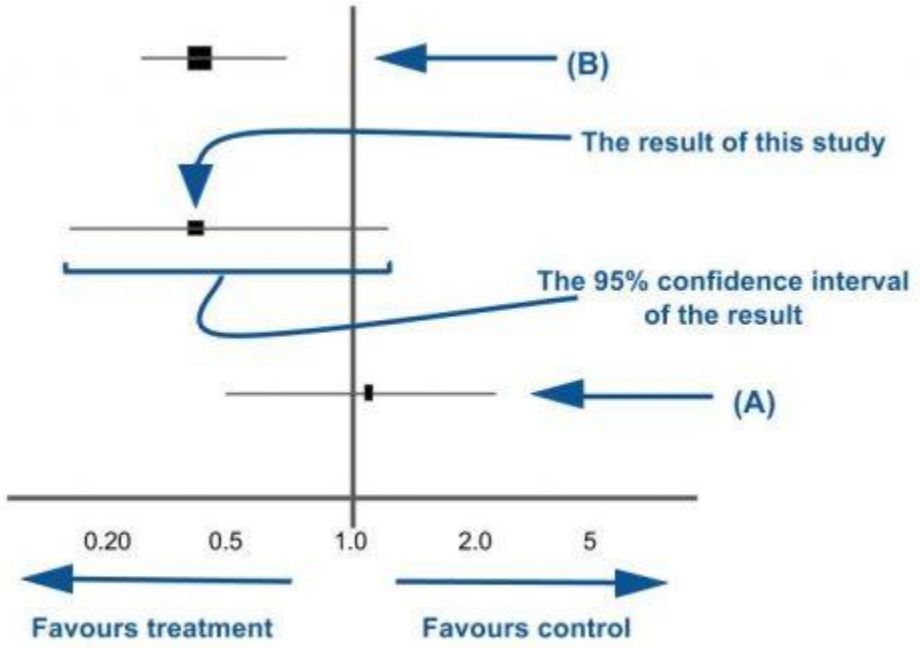
(Forest plot)

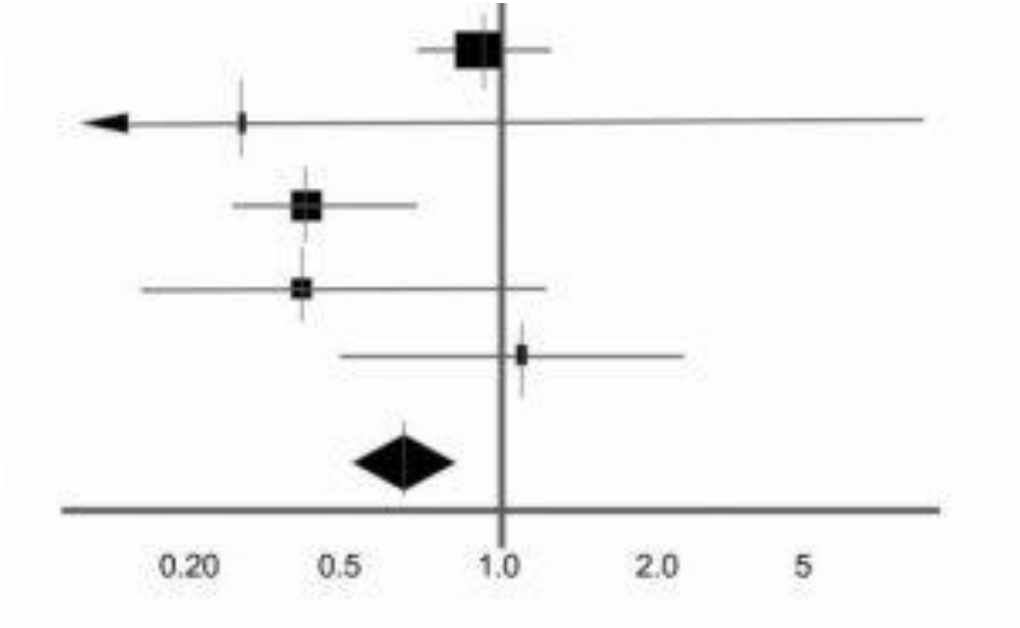


PASO 1: EL EJE

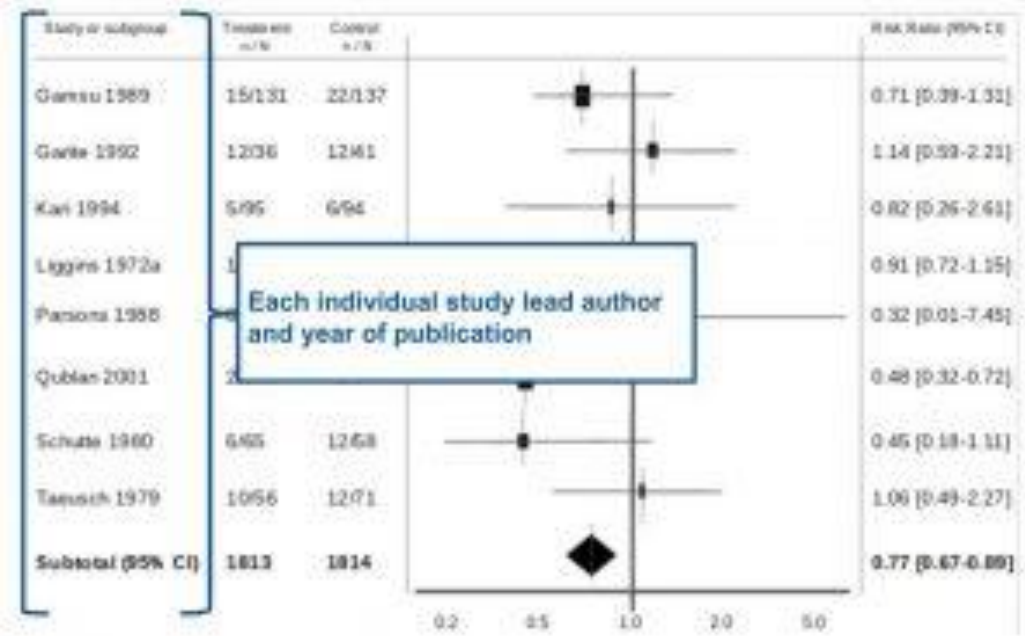

Line of null effect
Horizontal axis
0.20
0.5
1.0
2.0
5
Scale for statistic being displayed
(Odds Ratio or Relative Risk in this case)

PASO 2: LÍNEAS DEL ESTUDIO



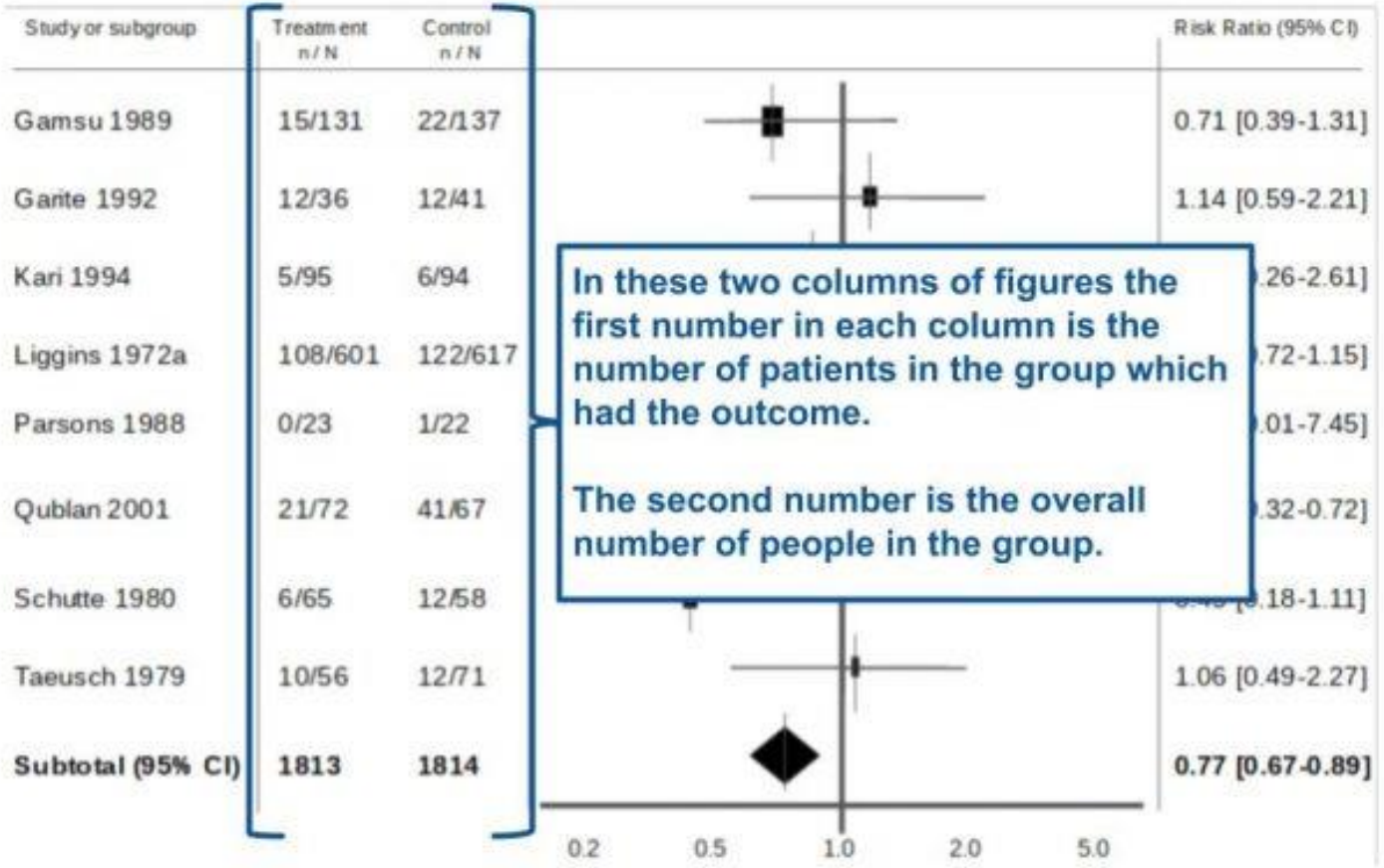


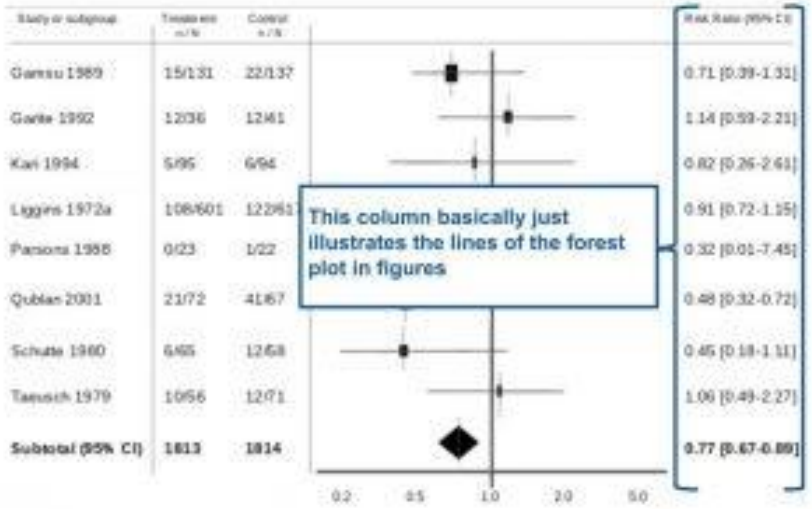
PASO 3: COMBINACIÓN DE LINEAS Y RESULTADOS



PASO 4: AUTORIA DE LOS ESTUDIOS

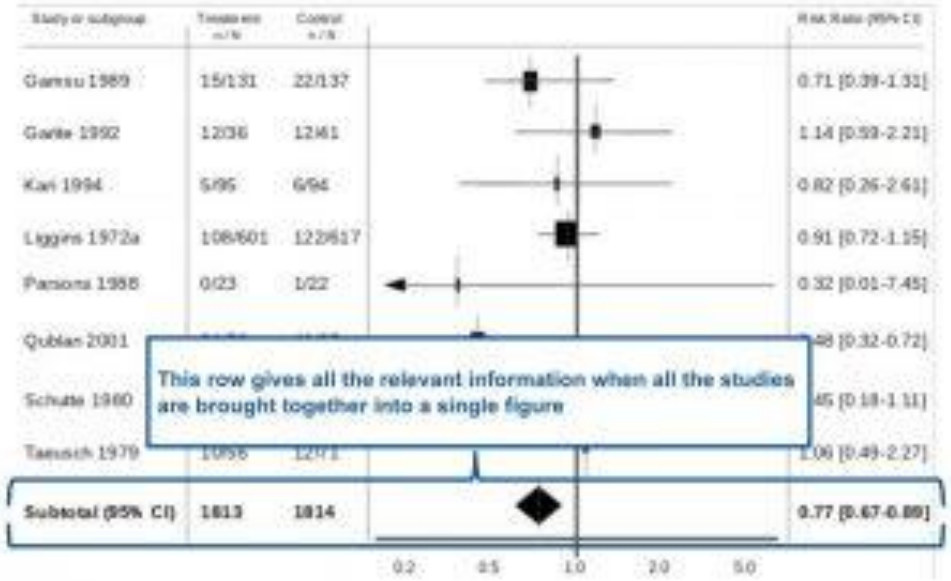
PASO 5: CANTIDAD DE PARTICIPANTES



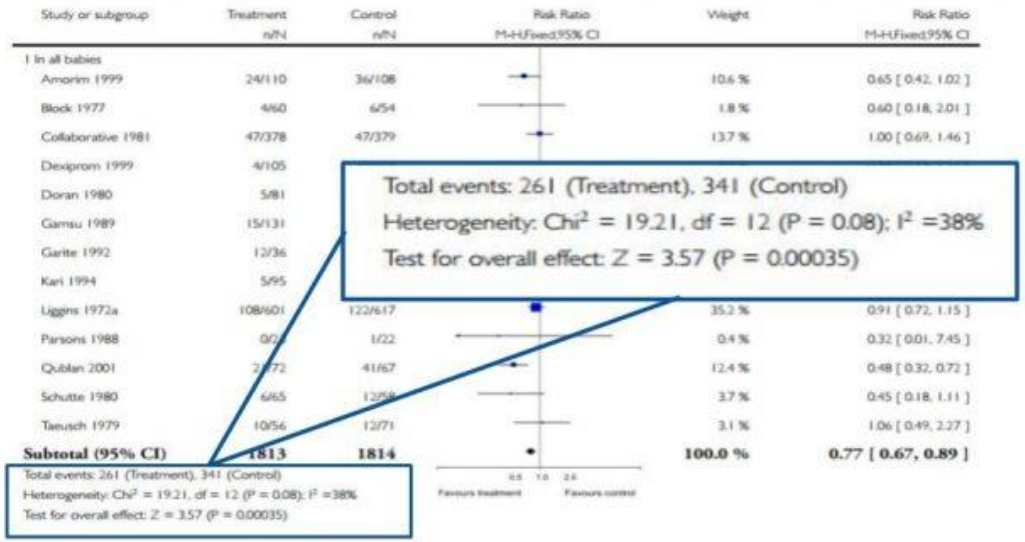


PASO 6: RESULTADOS DE LOS ESTUDIOS

PASO 7: RESUMEN DE LOS RESULTADOS



PASO 8: VARIABILIDAD DE LOS ESTUDIOS



LECTURA CRÍTICA DE UNA REVISIÓN SISTEMÁTICA

Klgo. Alvaro Besoaín Saldaña
Departamento de Kinesiología
Facultad de Medicina
Universidad de Chile