

THIRD WORLD CONGRESS OF SPORTS PHYSICAL THERAPY VANCOUVER 2019

Knowledge translation

@karenlitzyNYC
@DrChrisBarton
@RodWhiteley

The answer is 17 years, what is the question: understanding time lags in translational research

Zoe Slate Morris¹ • Steven Wooding² • Jonathan Grane³

J R Soc Med 2011; 104: 130-132 DOI: 10.1177/096032711038480



Perverse incentives

• What gets measured matters

• Measure what matters

Research

Clinician

Patient

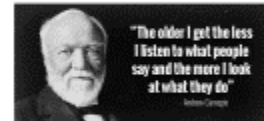


Research

Clinician



Changing clinical practice



Bridging the research-clinic divide

Dr Christian Barton

La Trobe Sport and Exercise Medicine Research Centre, Melbourne, Australia
Department of Surgery, University of Melbourne, North Melbourne, Melbourne, Australia
Clinical Services and Research, Geelong Health Centre, Melbourne, Australia

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CANADA

The answer is 17 years, what is the question: understanding time lags in translational research

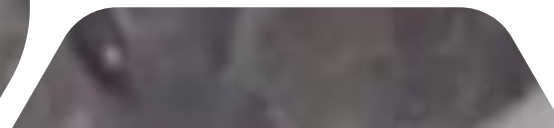
Zoë Slote Morris¹ • Steven Wooding² • Jonathan Grant²

J R Soc Med 2011; **104**: 510–520. DOI 10.1258/jrsm.2011.110180



- What gets measured matters
- Measure what matters

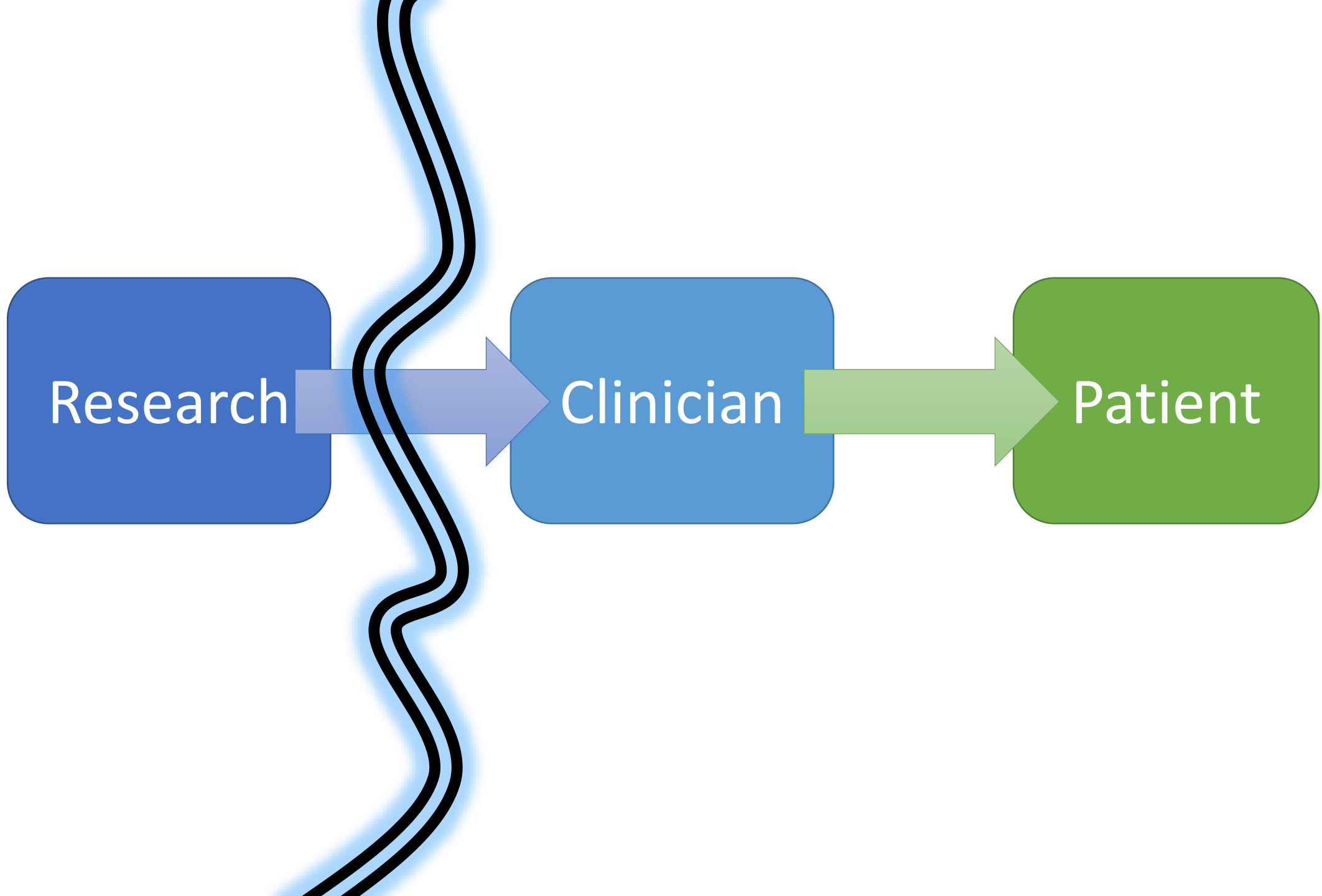
Perverse incentives





Perverse incentives =
Perverse outcomes

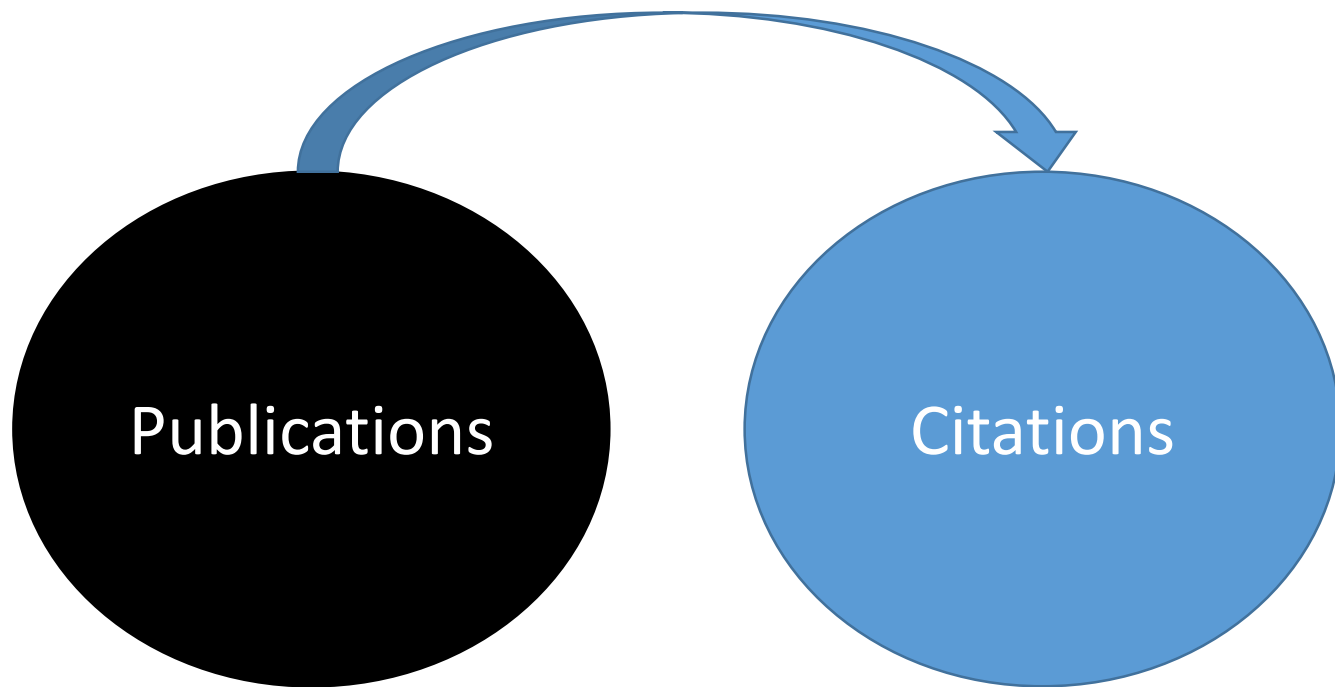
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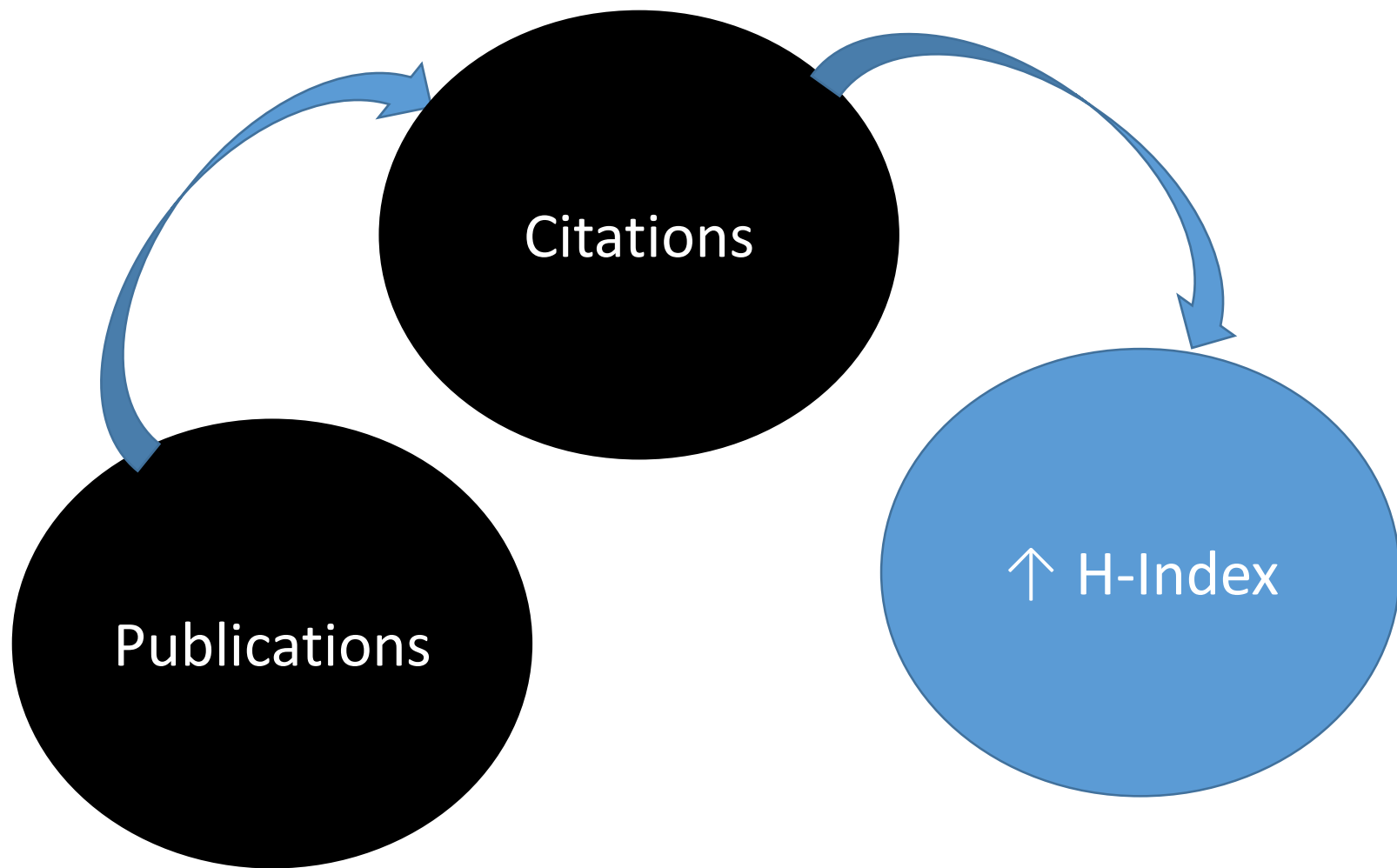


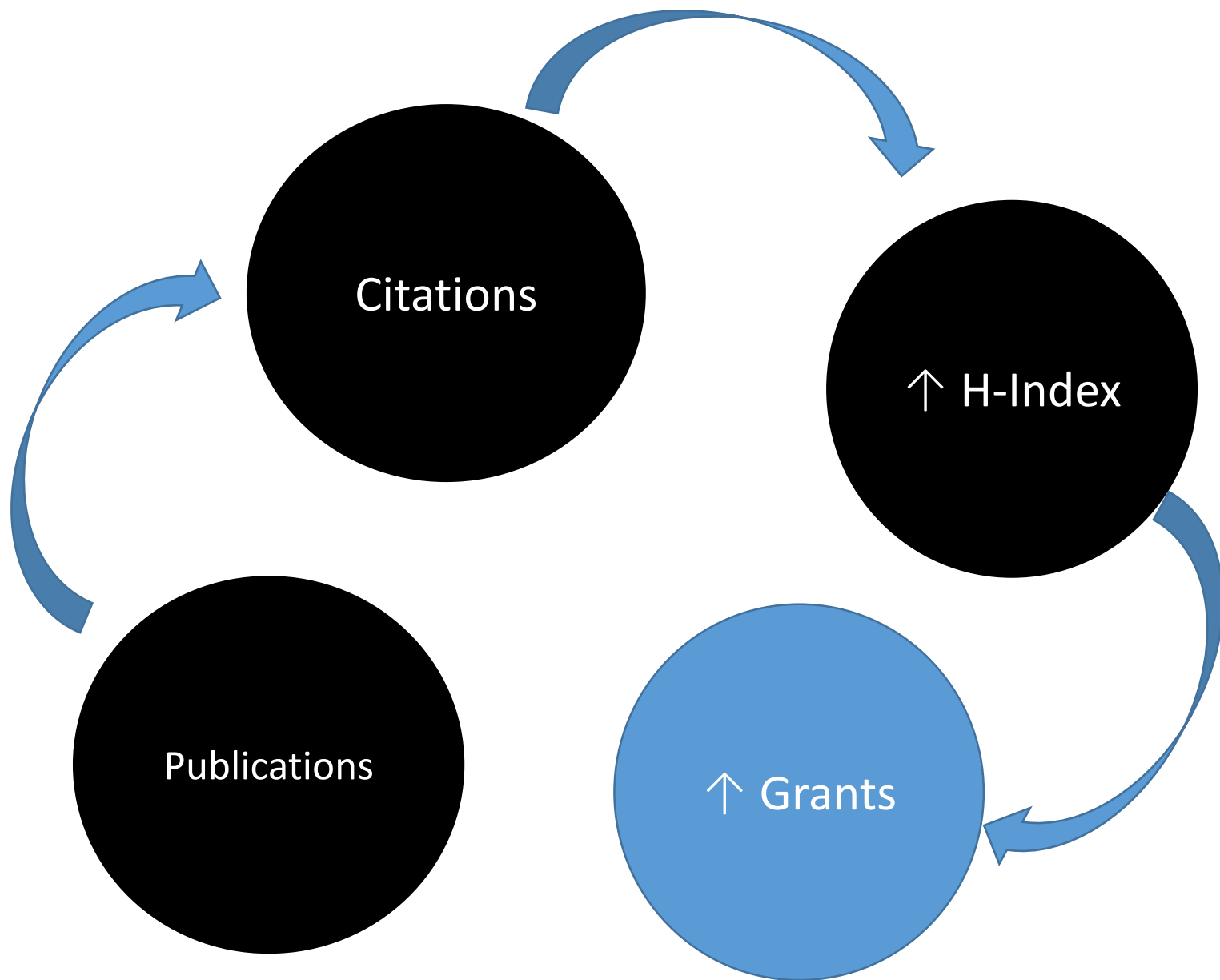


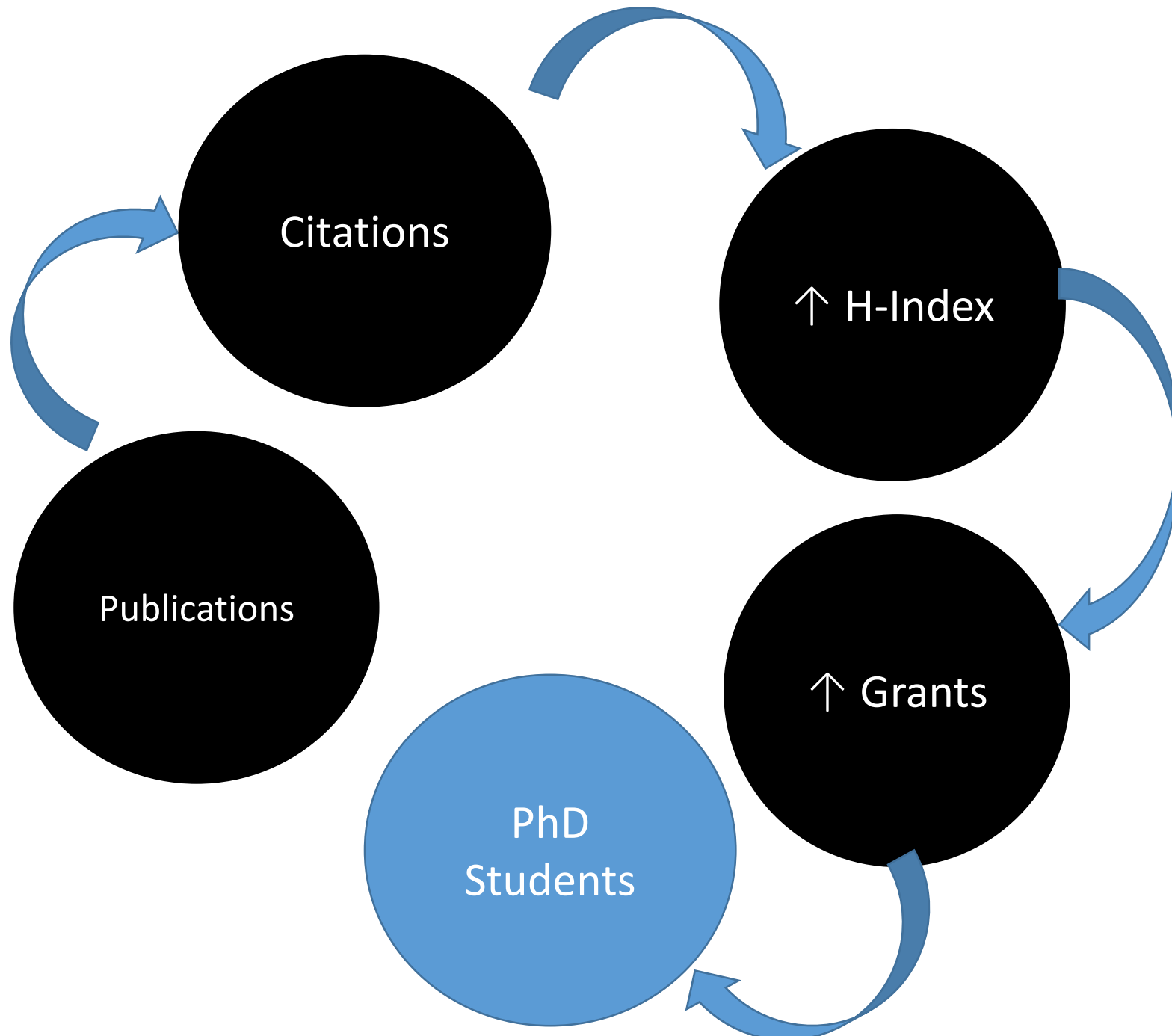


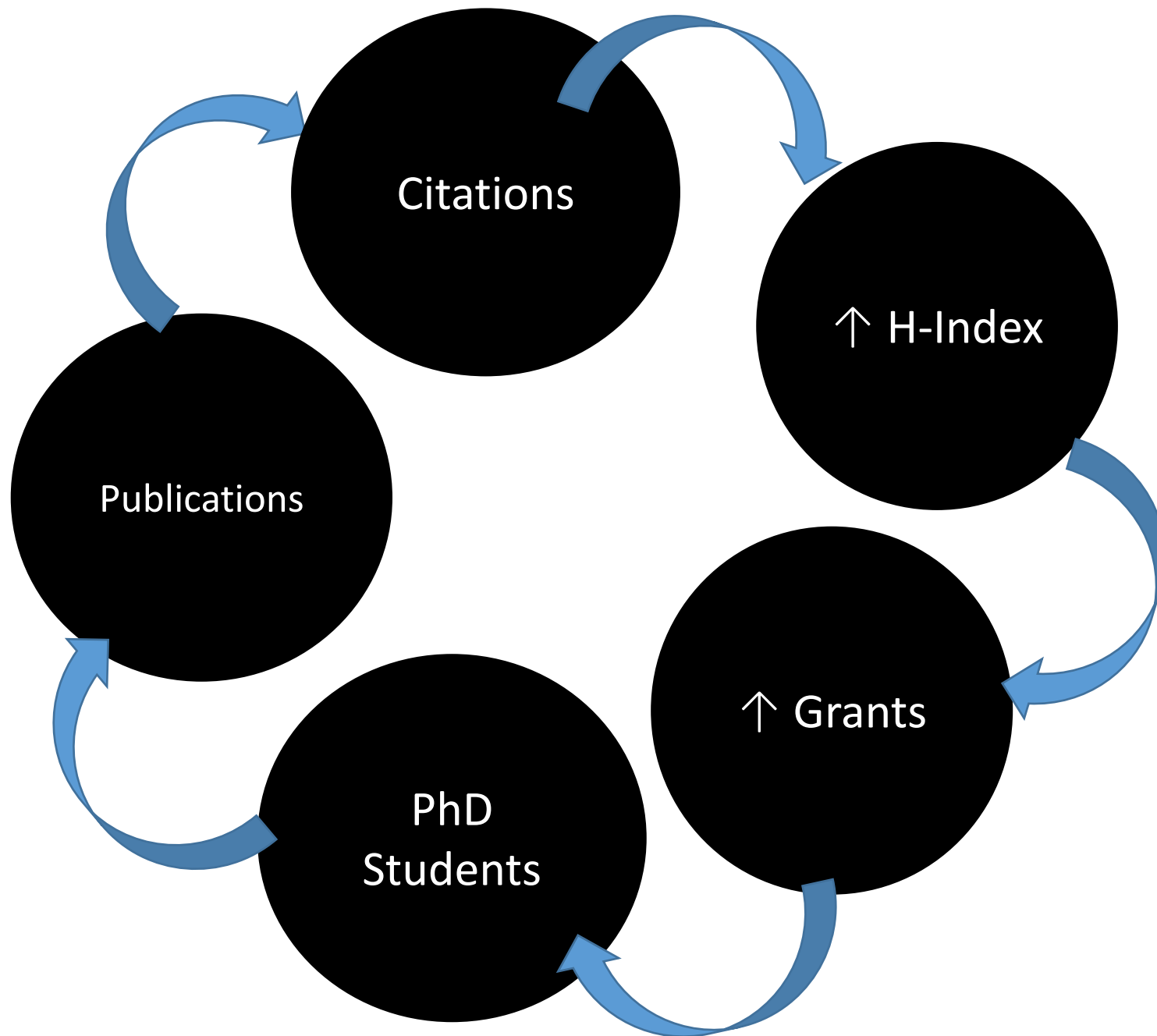


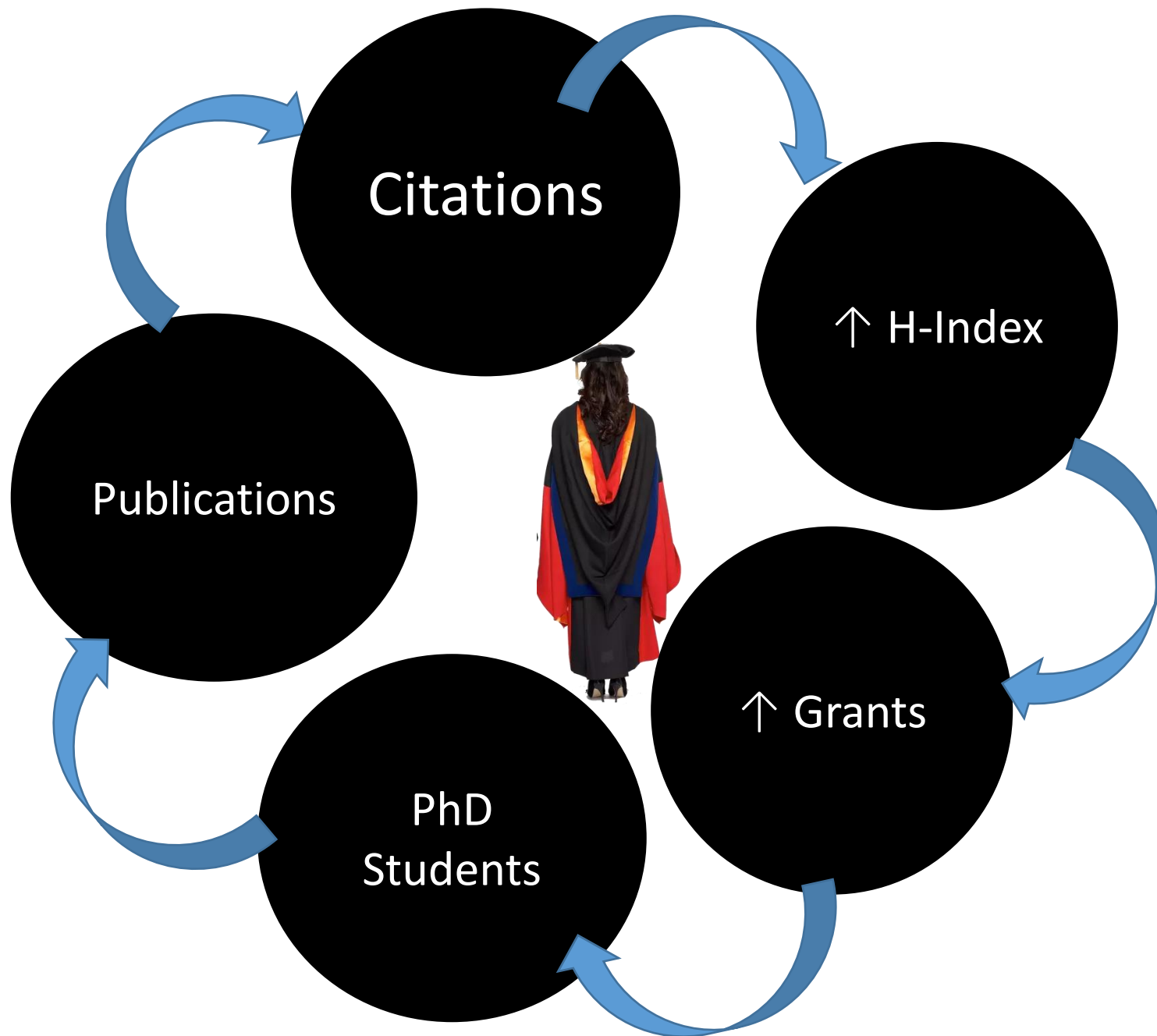


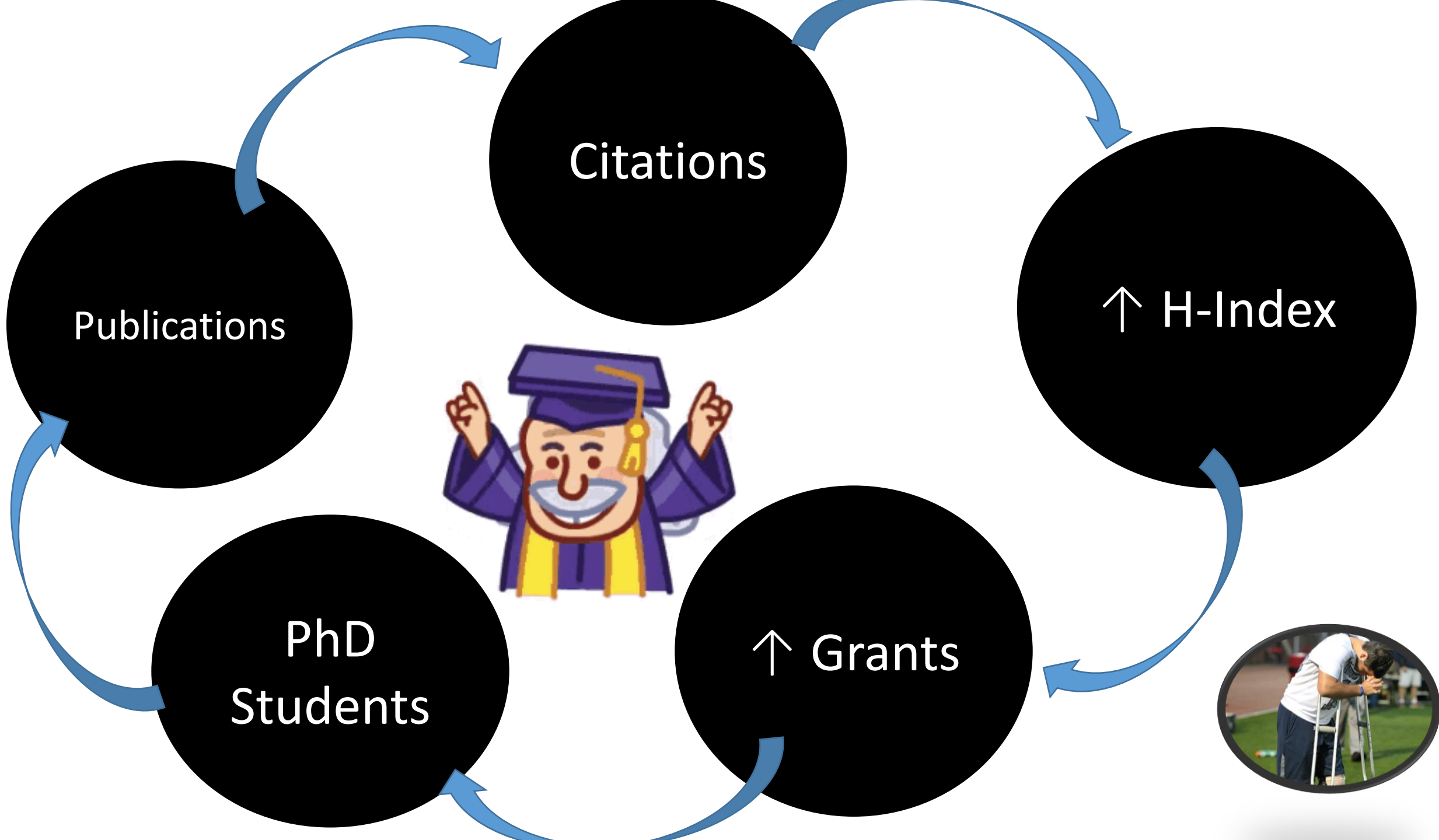














INVESTING

FINANCE | BANKS | **INVESTING** | WALL STREET | HEDGE FUNDS | M&A | INSURANCE

Goldman Sachs asks in biotech research report: 'Is curing patients a sustainable business model?'

Tae Kim | @firstadopter

Published 3:15 PM ET Wed, 11 April 2018 | Updated 7:20 PM ET Wed, 11 April 2018

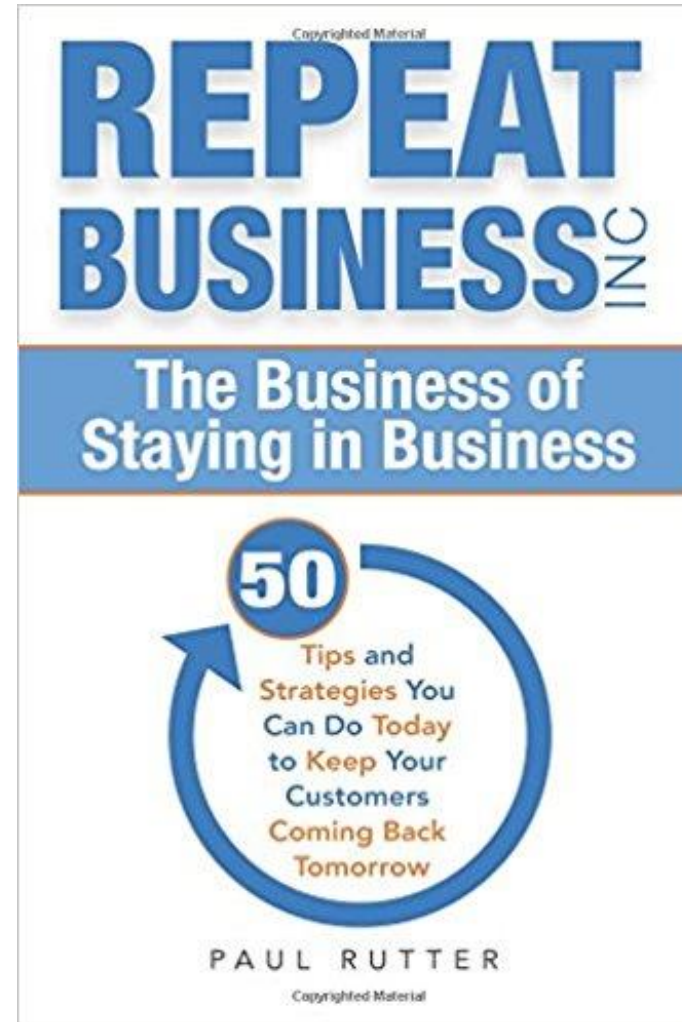


Yuri Arcurs | Getty Images

Goldman Sachs analysts attempted to address a touchy subject for biotech companies, especially those involved in the pioneering "gene therapy" treatment: cures could be bad for business in the long run.

"Is curing patients a sustainable business model?" analysts ask in an April 10 report entitled "The Genome Revolution."

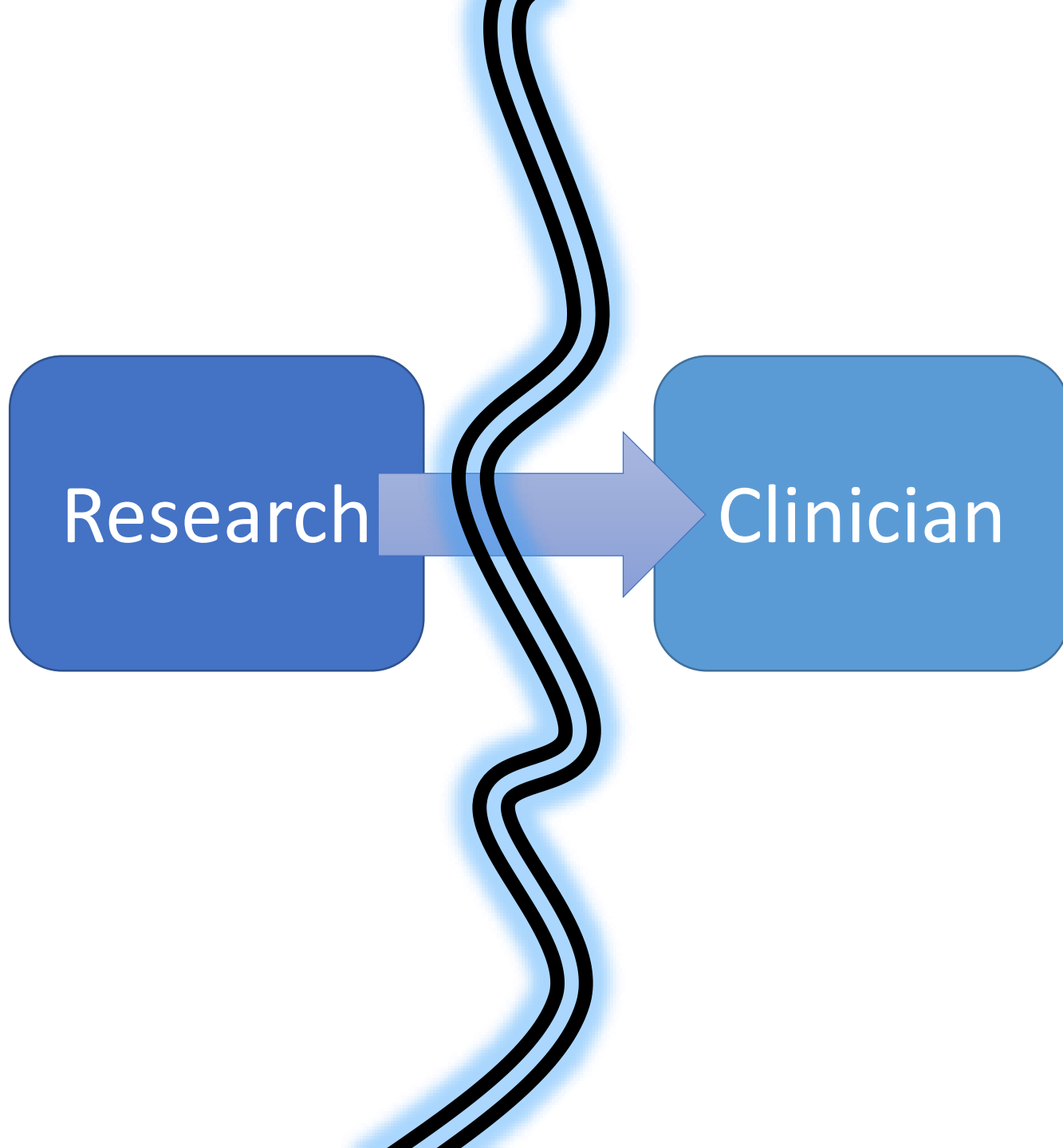
"The potential to deliver 'one shot cures' is one of the most attractive aspects of gene therapy, genetically-engineered cell therapy and gene editing. However, such treatments offer a very different outlook with regard to recurring revenue versus chronic therapies," analyst Salveen

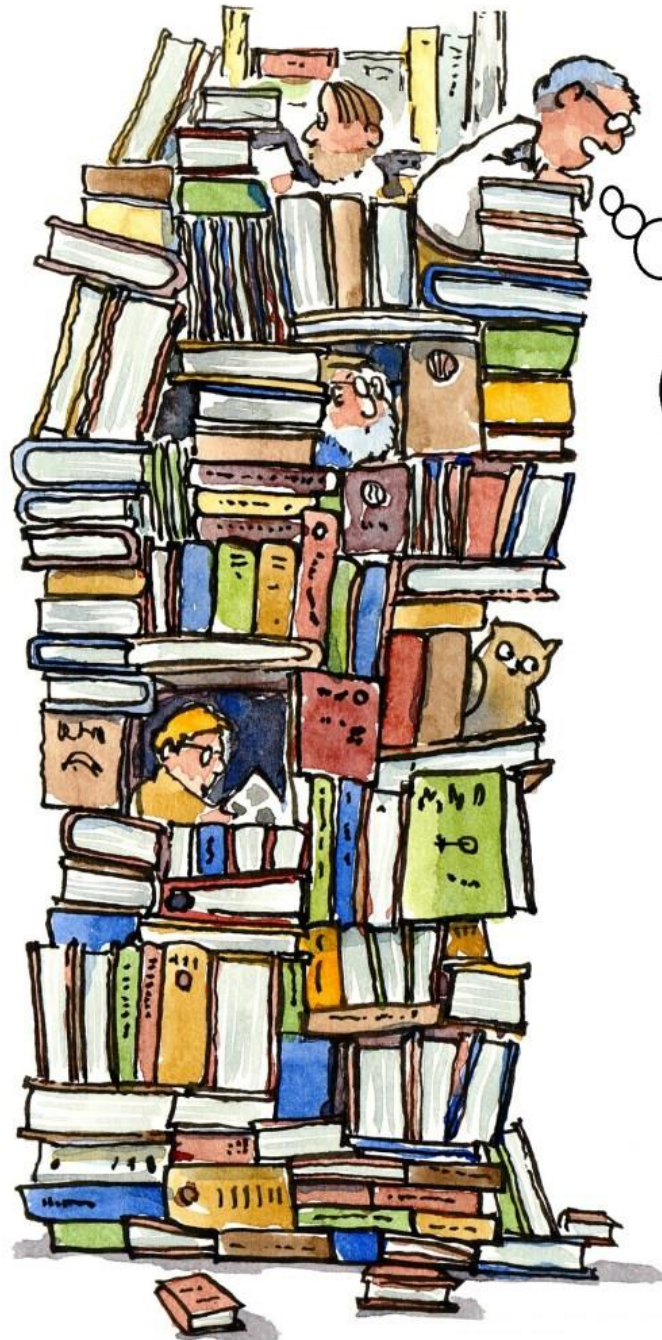


REPEAT BUSINESS

5 ways to reap the benefits
of your existing client base

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No, no...we just
study it.

Your job is to go
out and do it.





Over 350 years of scientific publishing

[← Publishing activities](#)

During 2015 we celebrated the 350th anniversary of [*Philosophical Transactions*](#), the world's first science journal.

Philosophical Transactions, first published in 1665, pioneered the concepts of scientific priority and peer review which, together with archiving and dissemination, provide the model for almost 30,000 scientific journals today.

Information about the activities and resources associated with this celebration can be found below.

Since this landmark occasion, we have digitised original copies of all our journals from 1665 to 1996 to create the [Royal Society Journal Collection: Science in the Making](#). Now we are looking to bring more content related to the journals out of our archive for you to explore. [Science in the Making](#) is a unique way for you to discover, transcribe, tag and comment on referee reports, photos, correspondence and more, previously only available to people visiting our [library](#).



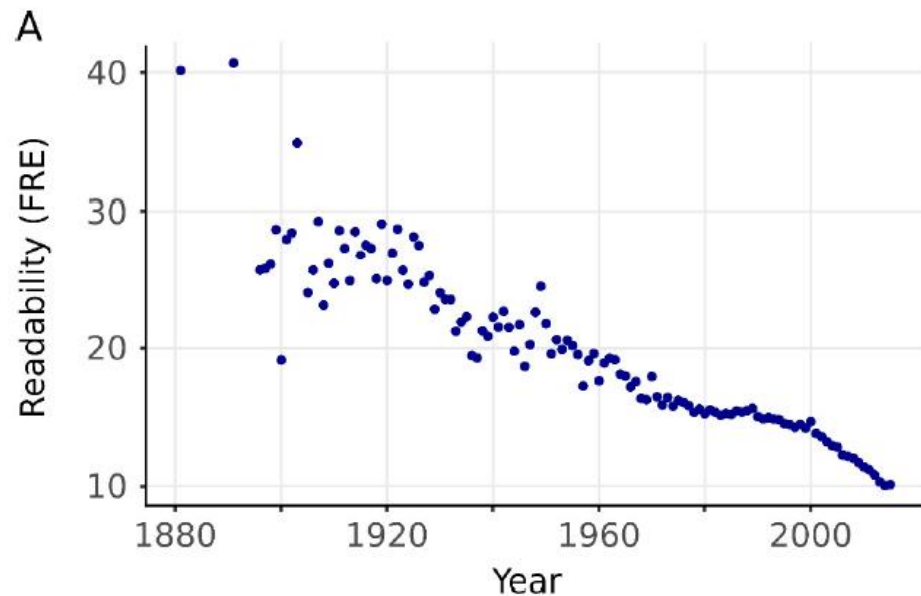




RESEARCH

The readability of scientific texts is decreasing over time

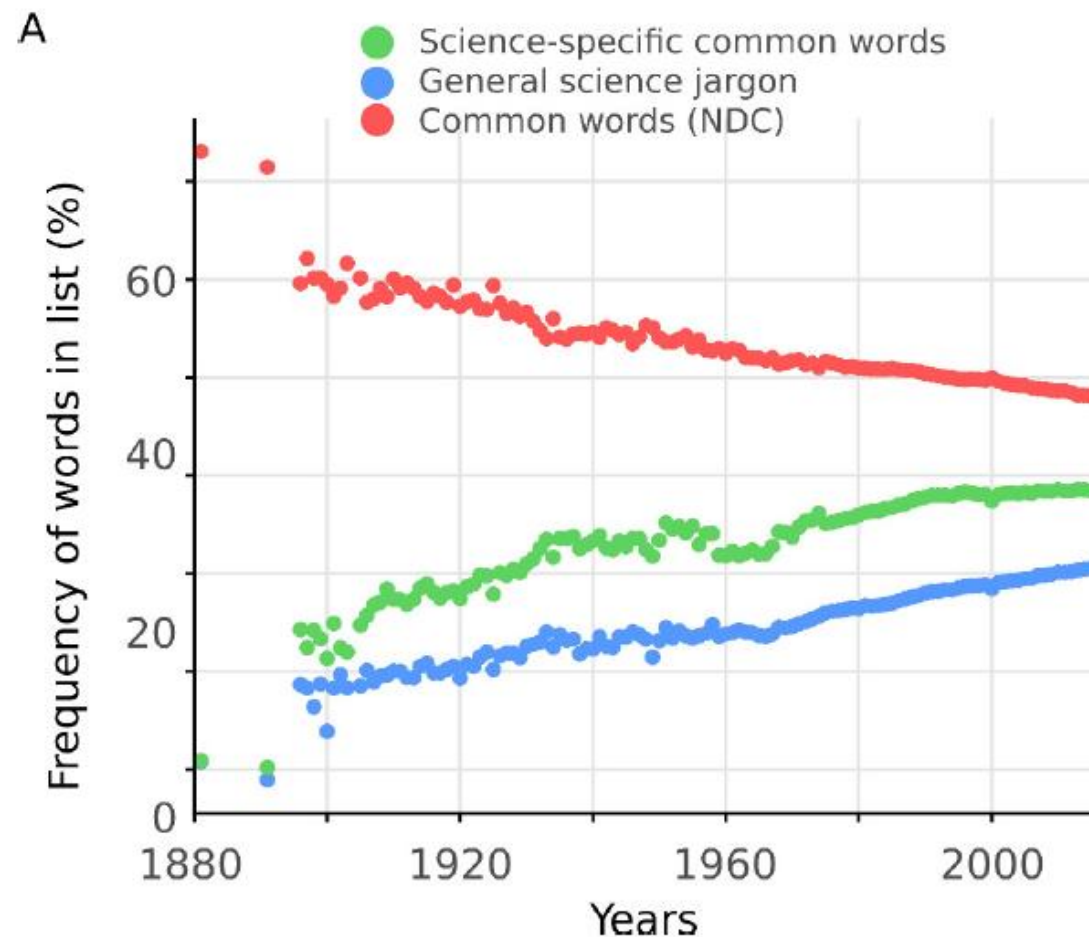
Abstract Clarity and accuracy of reporting are fundamental to the scientific process. Readability formulas can estimate how difficult a text is to read. Here, in a corpus consisting of 709,577 abstracts published between 1881 and 2015 from 123 scientific journals, we show that the readability of science is steadily decreasing. Our analyses show that this trend is indicative of a growing use of general scientific jargon. These results are concerning for scientists and for the wider public, as they impact both the reproducibility and accessibility of research findings.



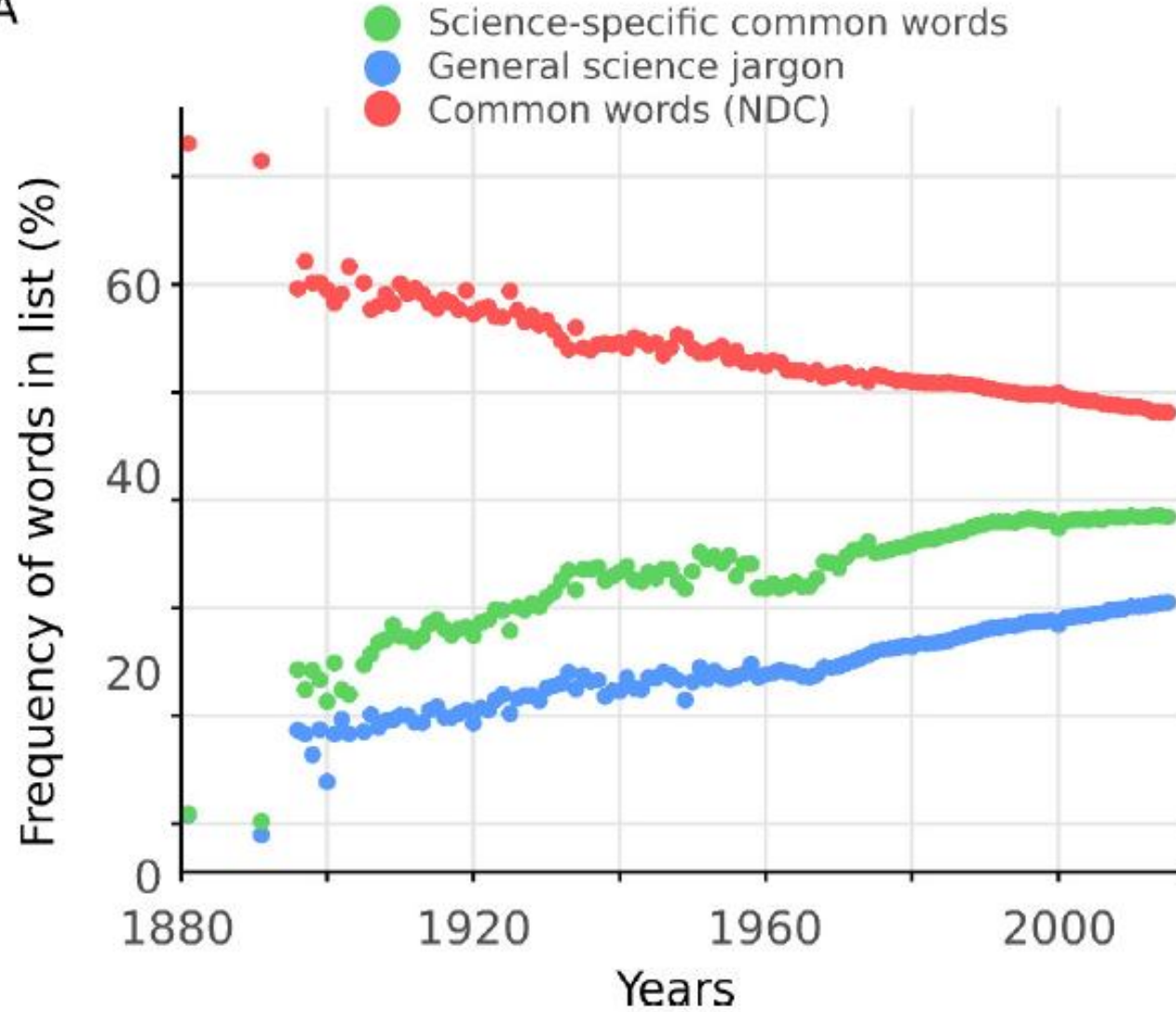
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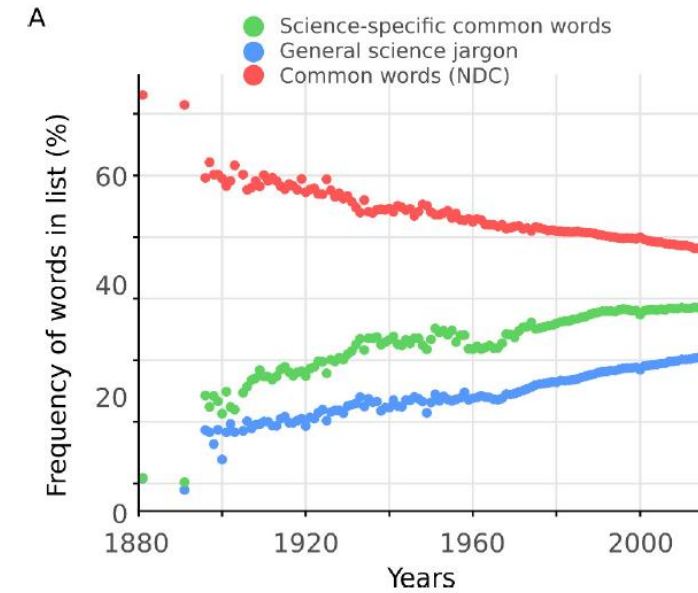
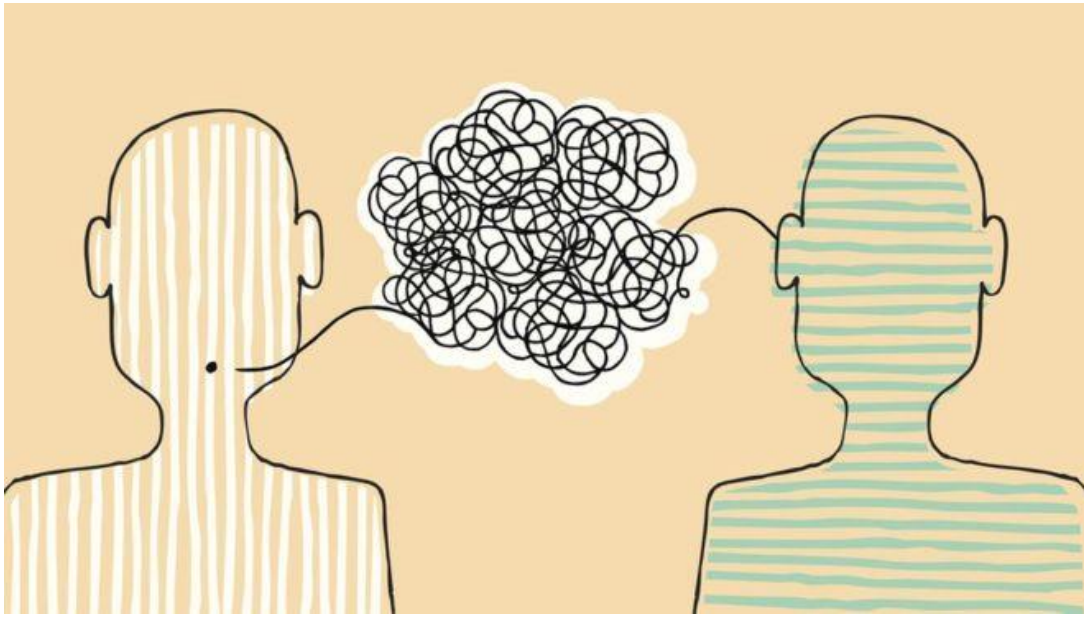
A



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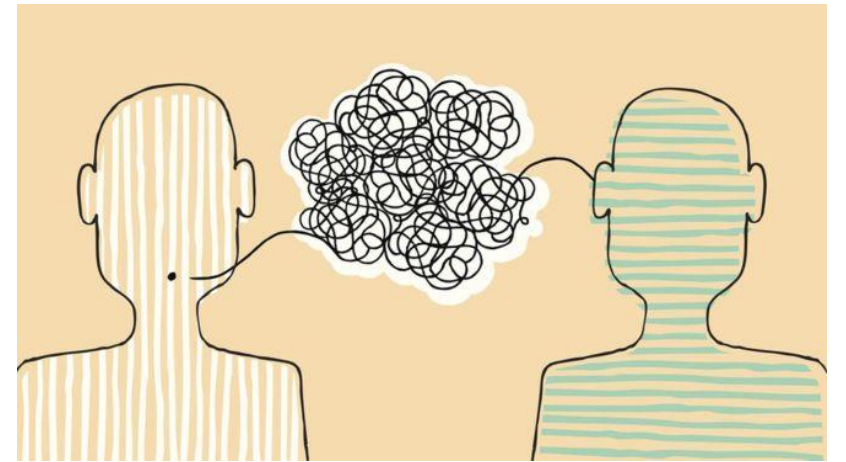


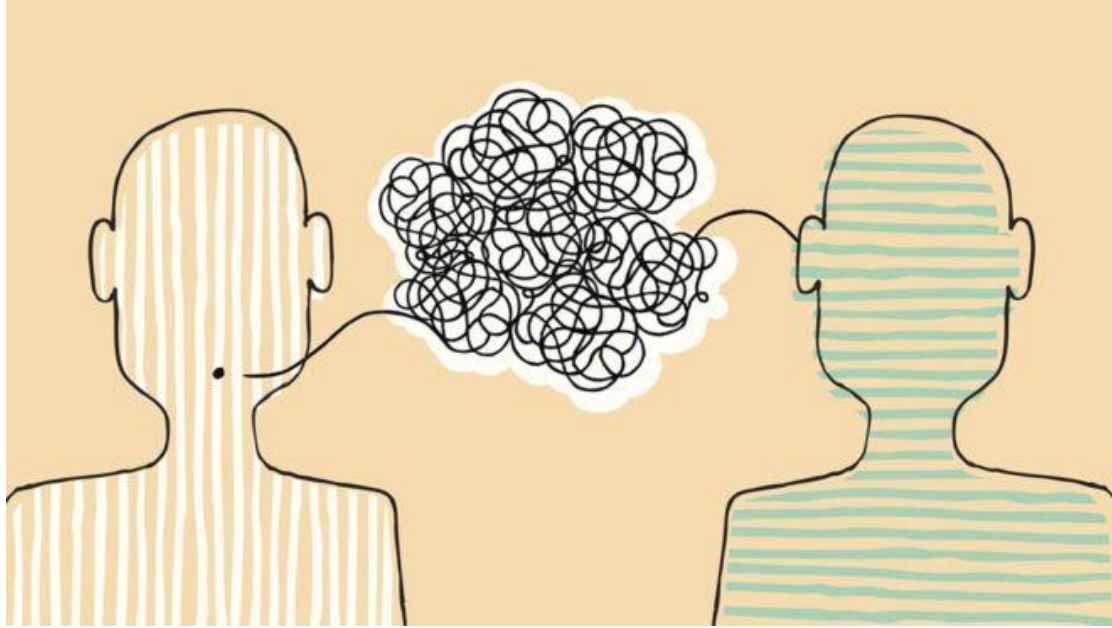
RESEARCH

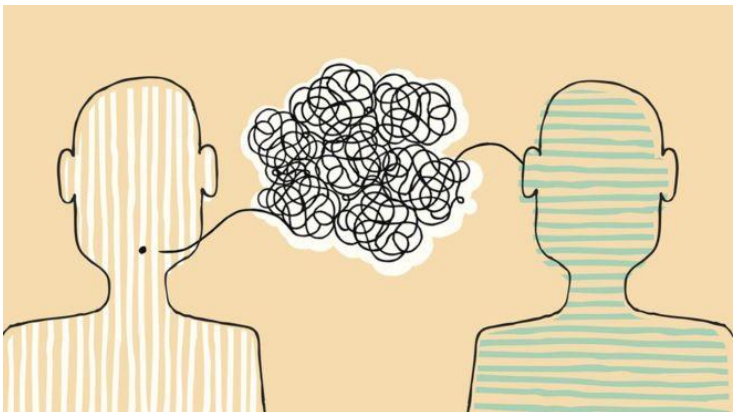
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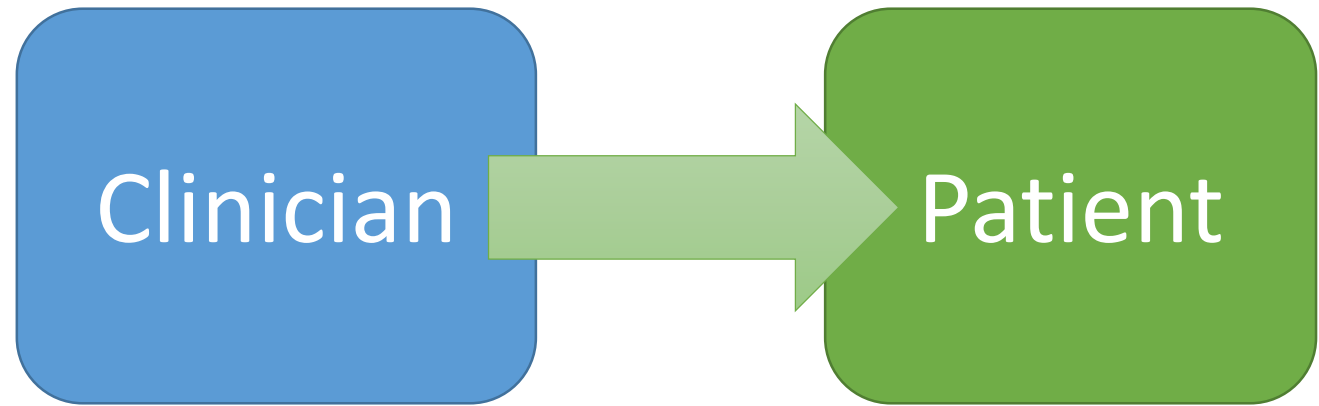




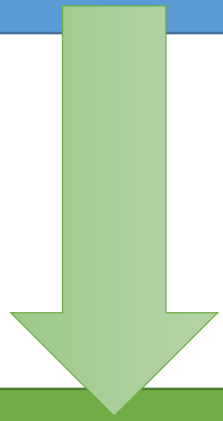


“Are back pain patients seeing their care improve because of your research?”

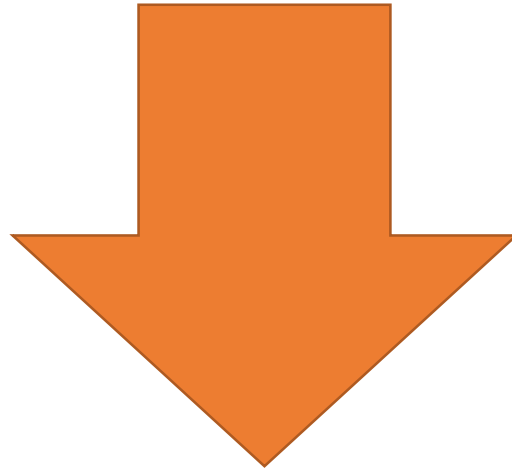




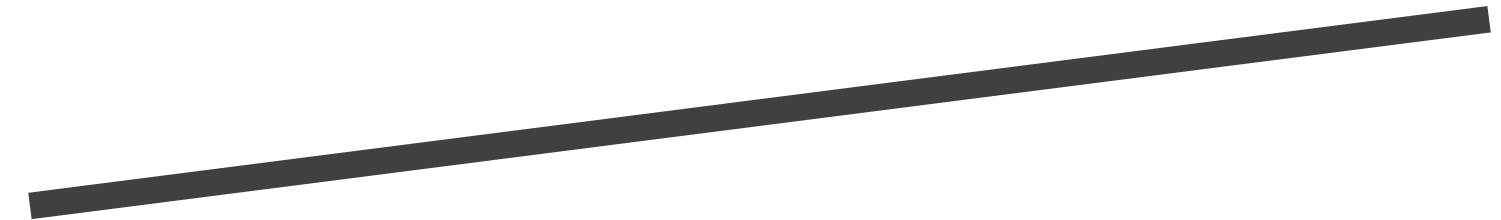
Clinician



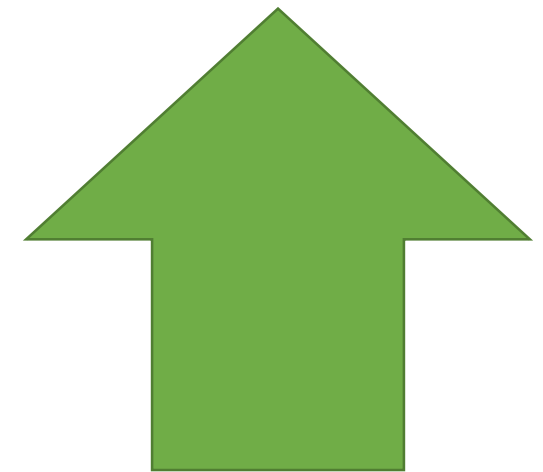
Patient



Stuff that
doesn't work



Stuff that
does work





What's
working?

How do I
know





Clinical importance of changes in chronic pain intensity measured on an
11-point numerical pain rating scale

John T. Farrar^{a,*}, James P. Young Jr.^b, Linda LaMoreaux^b, John L. Werth^b, R. Michael Poole^b

**Select the number that best describes your neuropathic pain during
the past 24 hours. (*Circle one number only*)**

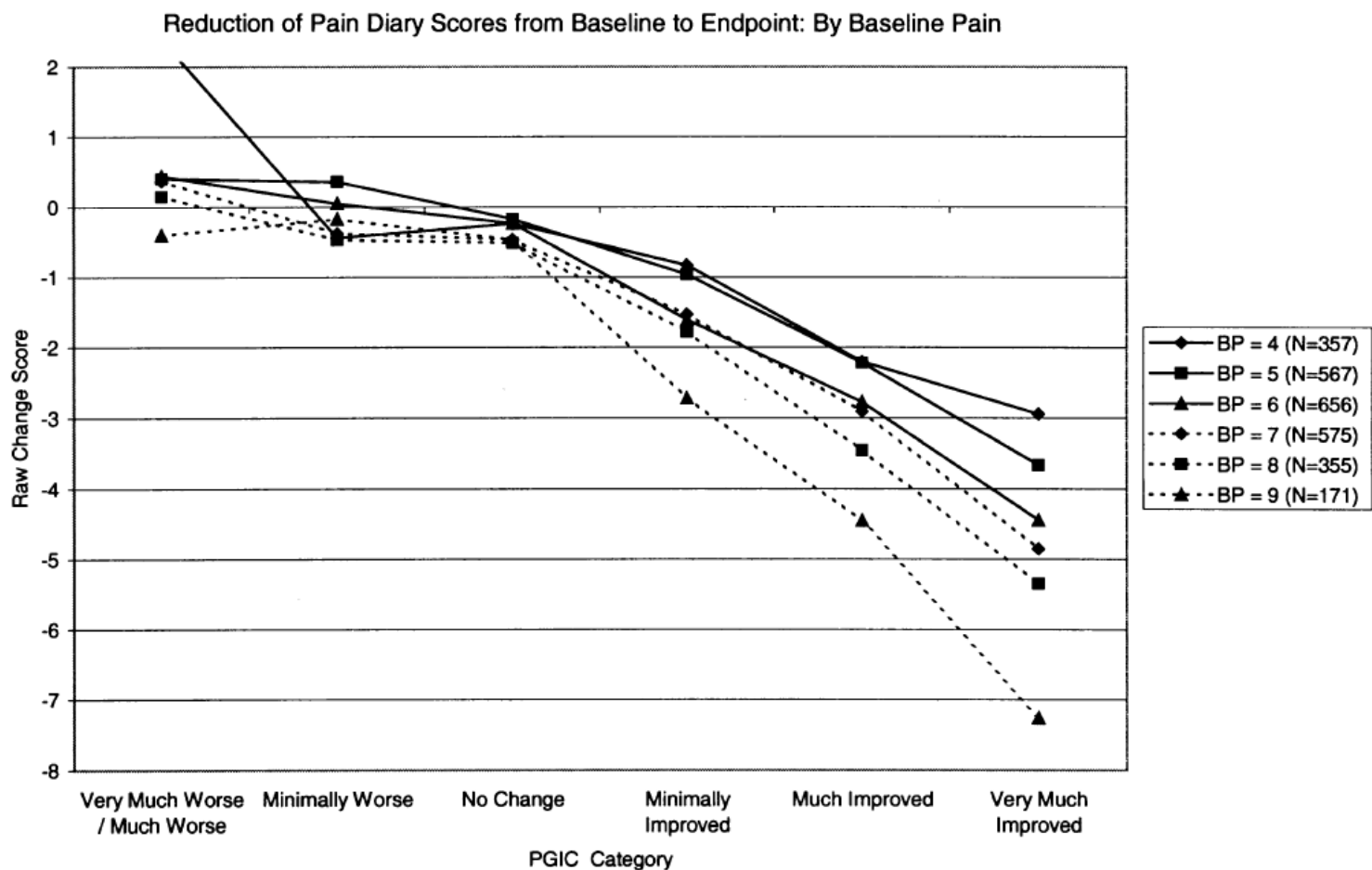
0	1	2	3	4	5	6	7	8	9	10	
No pain											Worst possible pain

Since the start of the study, my overall status is:

- 1 ☐ Very Much Improved
- 2 ☐ Much Improved
- 3 ☐ Minimally Improved
- 4 ☐ No Change
- 5 ☐ Minimally Worse
- 6 ☐ Much Worse
- 7 ☐ Very Much Worse

Clinical importance of changes in chronic pain intensity measured on an 11-point numerical pain rating scale

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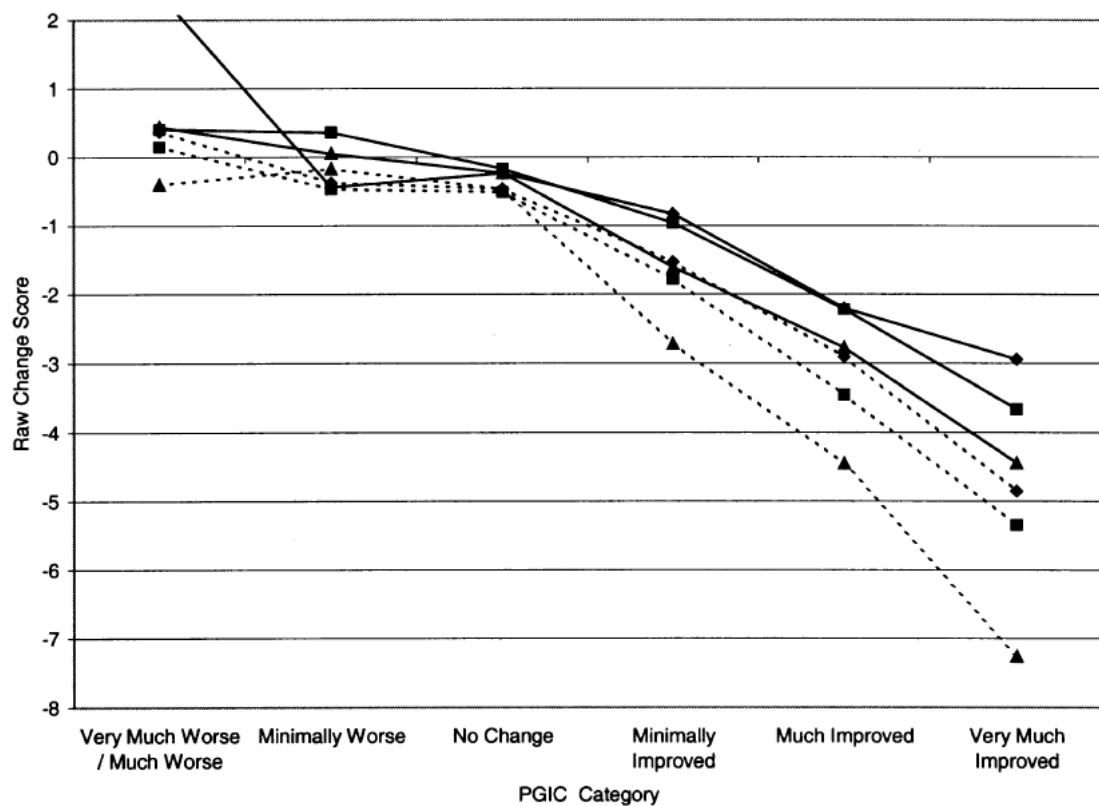




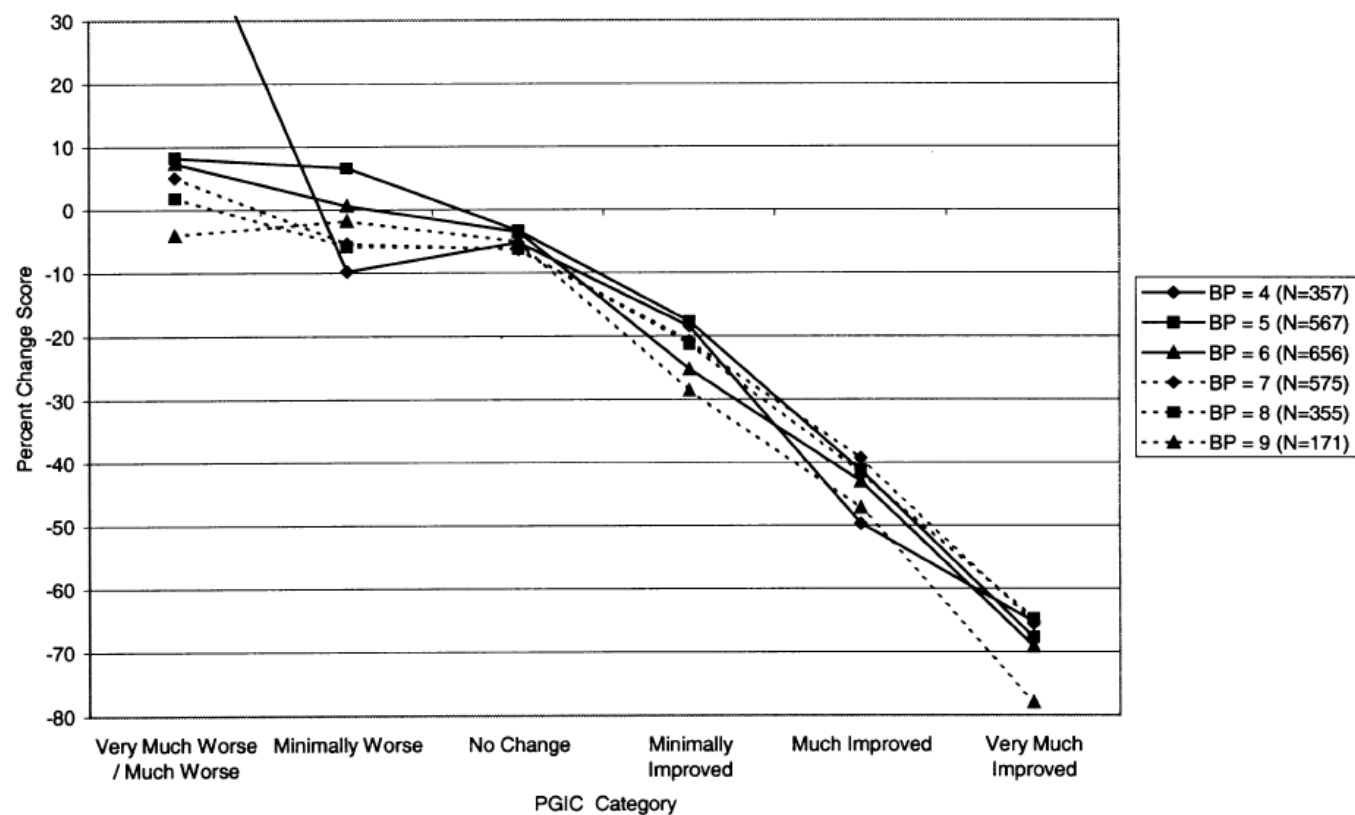
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Reduction of Pain Diary Scores from Baseline to Endpoint: By Baseline Pain



Percent Reduction of Pain Diary Scores from Baseline to Endpoint: By Baseline Pain





@KorakakisV



@KorakakisV

Are patients
getting
better
compared
to:



Before
treatment
(today)?

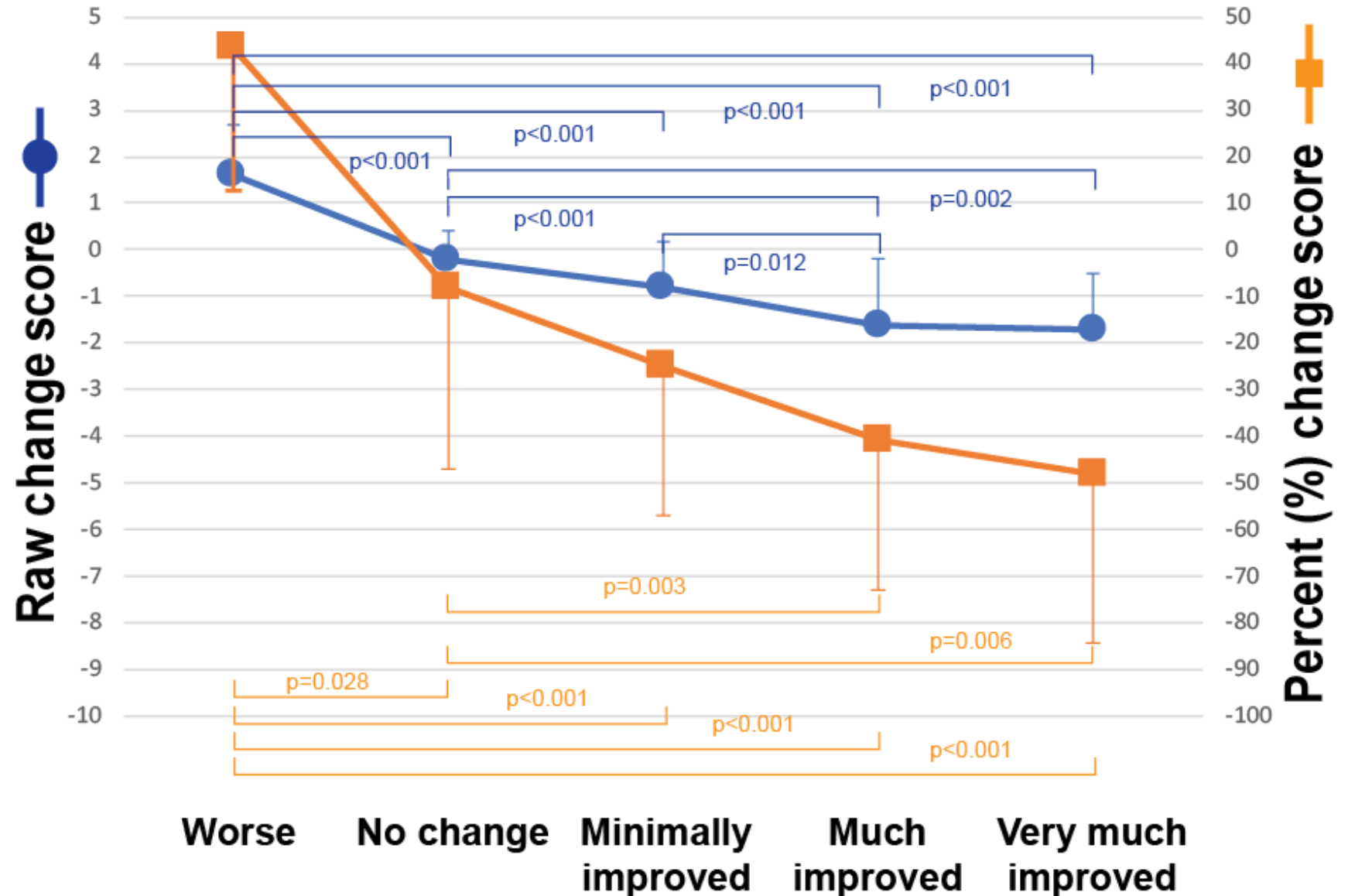
Their last
treatment

Before any
treatment

Before
treatment
(today)?



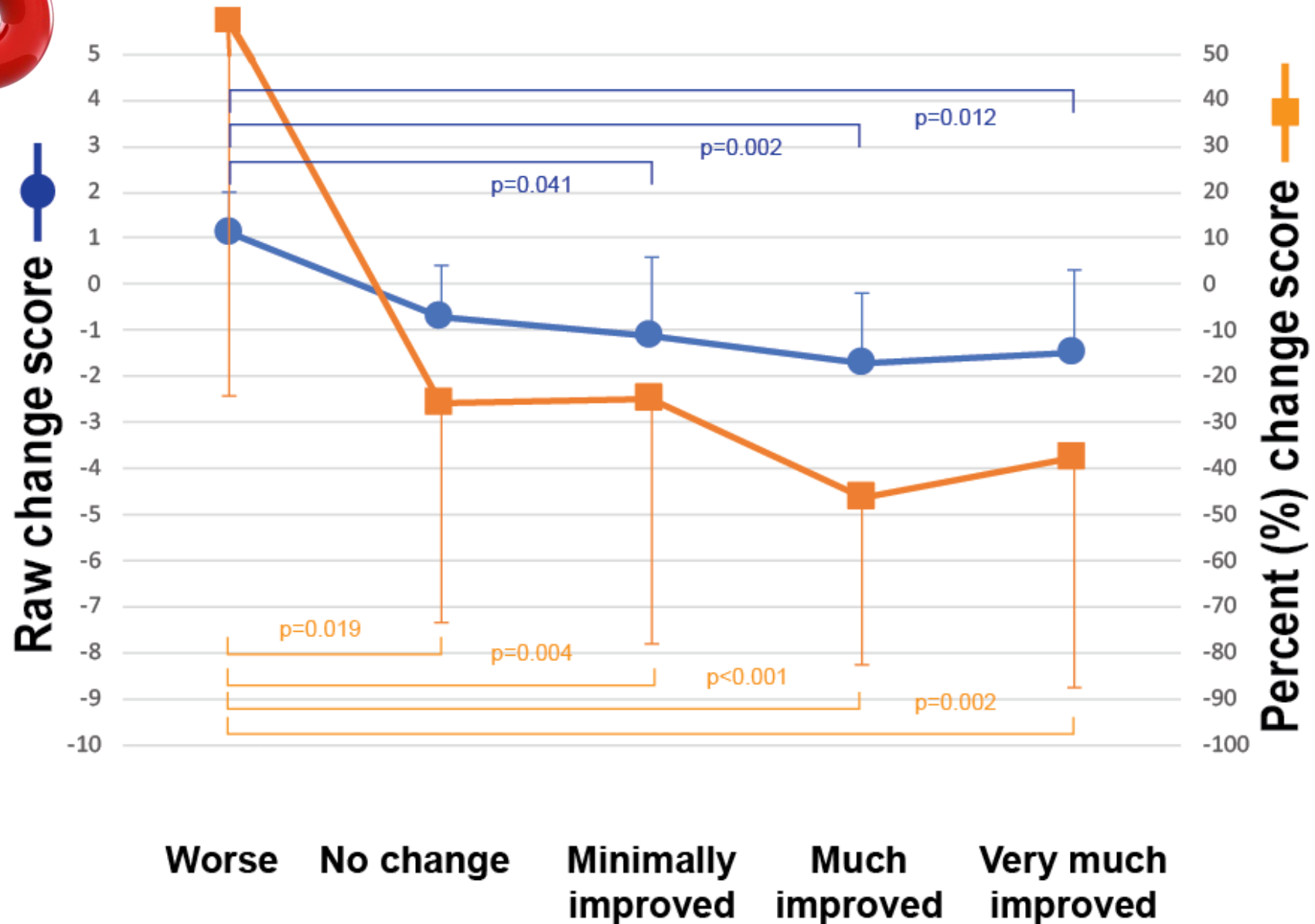
***“Compared to today before the session,
how do you feel now after session?”***



Their last
treatment

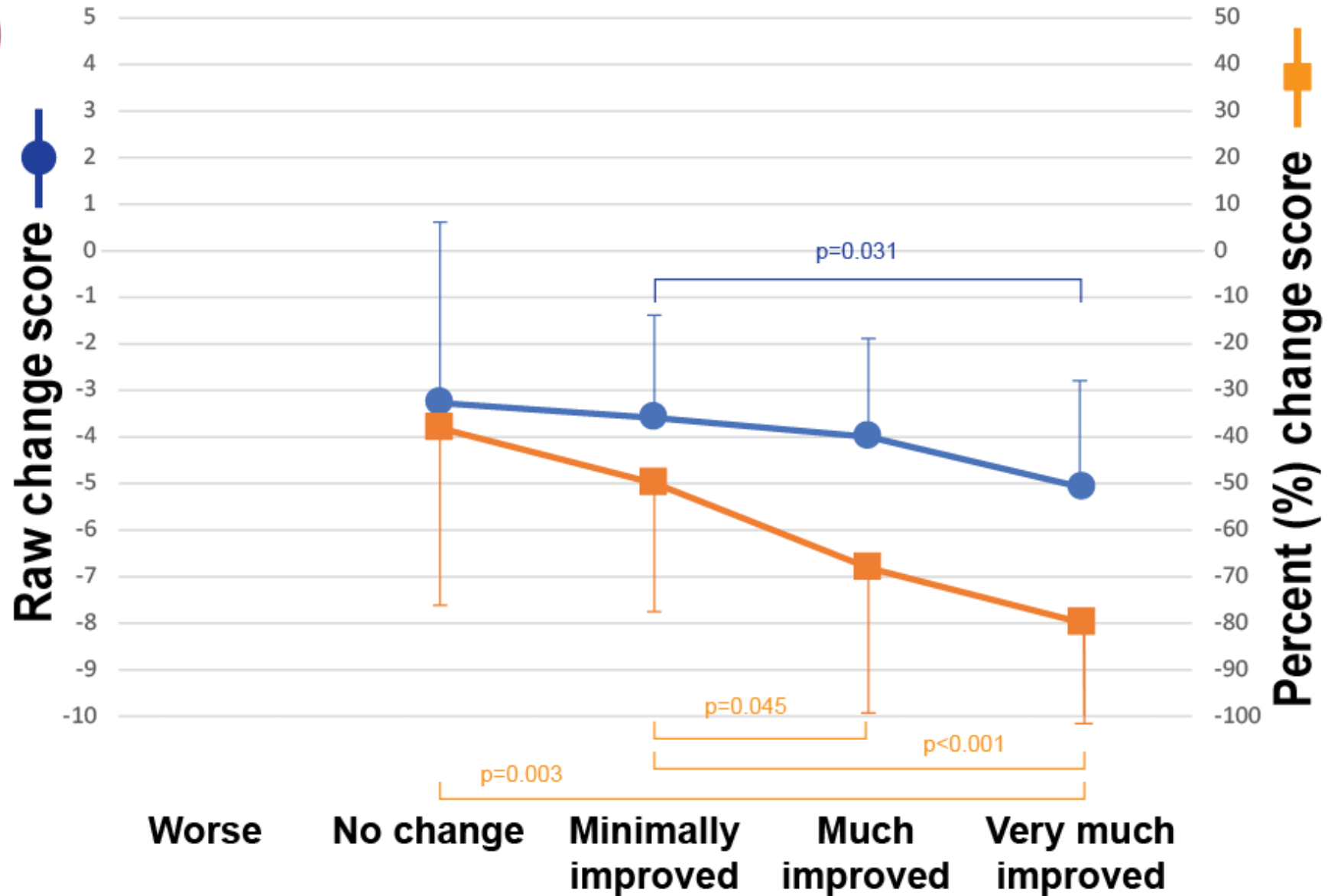


***“Compared to the last session,
how do you feel now?”***



***“Compared to the initial session,
how do you feel now?”***

Before any
treatment



APS 1995 Presidential Address

James N. Campbell

Note: APS's 1994–1995 president, James N. Campbell, MD, presented the following address on Sunday, November 12, 1995, at the Century Plaza Hotel in Los Angeles, during the 14th Annual Scientific Meeting of the American Pain Society.



James N. Campbell, MD

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Commentary



James N. Campbell, MD

Pain as the Fifth Vital Sign: Exposing the Vital Need for Pain Education

Natalia E. Morone, MD, MS^{1,2,3}; and Debra K. Weiner, MD^{1,3,4,5,6}

Pain as the Fifth Vital Sign: Exposing the Vital Need for Pain Education

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Dispensing opioids has almost doubled according to National Health and Nutrition Examination Survey data indicating that from 1988 to 1994 a total of 3.2% of Americans reported using opioids for pain, whereas from 2005 to 2008 a total of 5.7% reported use.^{3(pp129–130)} This significant increase has been associated with serious consequences, including an estimated 40 deaths per day due to prescription opioids.^{4,5}

Pain as the Fifth Vital Sign: Exposing the Vital Need for Pain Education

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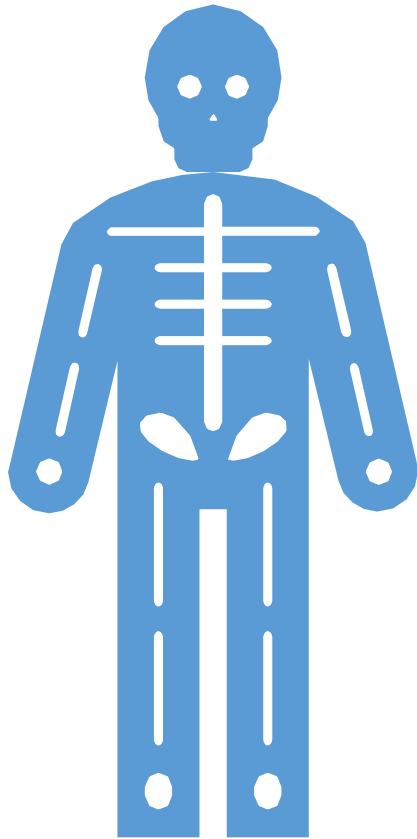
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James N. Campbell, MD



If not pain, then
maybe
function?



If not pain, then
maybe function?

If not pain, then maybe function?

IN THIS QUESTIONNAIRE, THE TERM PAIN REFERS SPECIFICALLY TO PAIN IN THE ACHILLES TENDON REGION

1. For how many minutes do you have stiffness in the Achilles region on first getting up?

100 min

--	--	--	--	--	--	--	--	--	--	--

 0 min

0 1 2 3 4 5 6 7 8 9 10

POINTS

2. Once you are warmed up for the day, do you have pain when stretching the Achilles tendon fully over the edge of a step? (keeping knee straight)

strong severe pain

--	--	--	--	--	--	--	--	--	--	--

 no pain

0 1 2 3 4 5 6 7 8 9 10

POINTS

3. After walking on flat ground for 30 minutes, do you have pain within the next 2 hours? (If unable to walk on flat ground for 30 minutes because of pain, score 0 for this question).

strong severe pain

--	--	--	--	--	--	--	--	--	--	--

 no pain

0 1 2 3 4 5 6 7 8 9 10

POINTS





Patient Specific Functional Scale

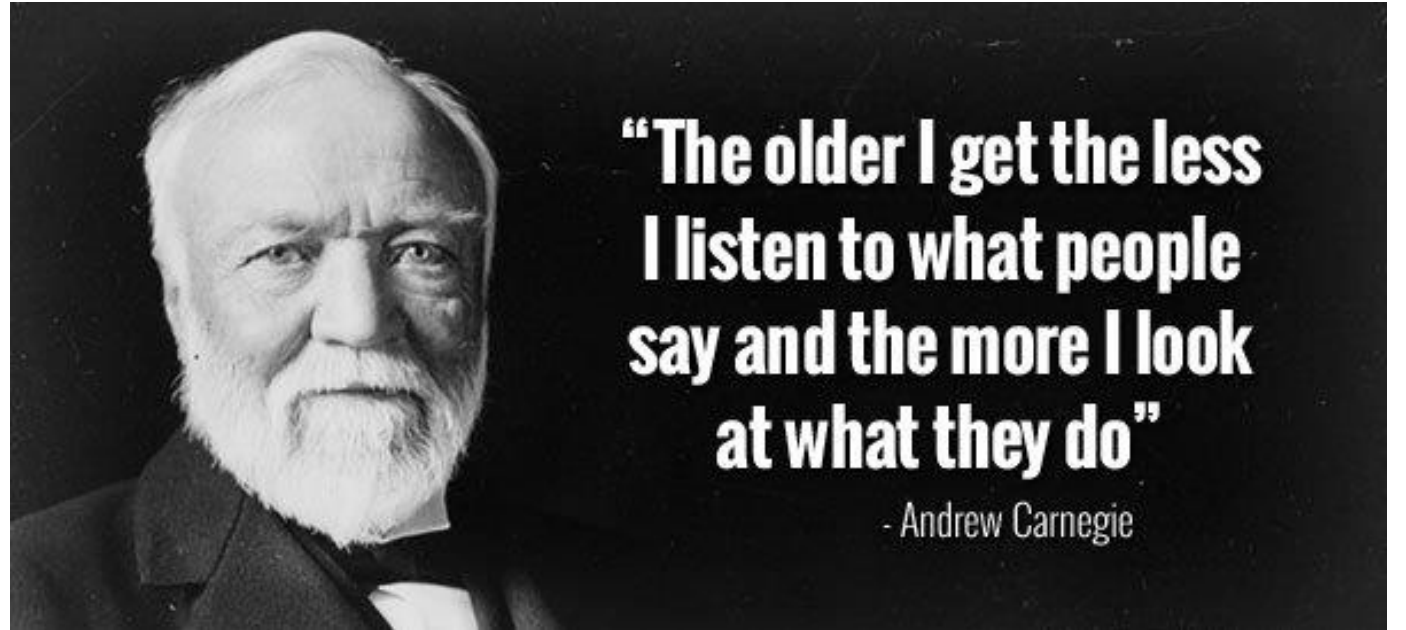
Please list at least 3 (up to 5) activities that you are unable to do or are having difficulty performing as a result of your pain/injury. Rate the level of difficulty performing each activity from 0-10.

The lower the number, the more difficulty you have; the higher the number, the more easily you can perform the activity

ACTIVITY	Initial Visit	Two Week f/u	Five Week f/u
1. Pushups	3	7	9
2. Bench Press	5	n/a	9
3. Lifting / Twisting	6	7	10
4. Equipment Run (wearing "full kit")	5	8	10
5.			
AVERAGE SCORE:	4.7	7.3	9.5

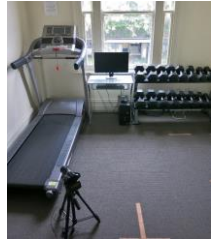
If not pain, then maybe function?

Changing clinical practice





“Think of the last thing you changed in your clinical practice, how did you learn about this?”



Bridging the research-clinic divide

Dr Christian Barton

La Trobe Sport and Exercise Medicine Research Centre, Melbourne, Australia

Department of Surgery, University of Melbourne, St.Vincent's Hospital, Melbourne, Victoria, Australia

Clinical Director and Physiotherapist, Complete Sports Care, Melbourne, Australia



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Research Centre



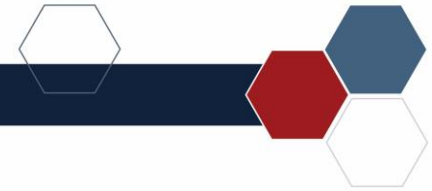
c.barton@latrobe.edu.au



@DrChrisBarton

Conflicts of Interest

Medical Research
Future Fund



No financial conflicts of interest

Not-for-profit initiatives knowledge translation initiatives

- GLA:D[®] Australia
- TREK (Translating Research Evidence and Knowledge)



Associate Editor, Deputy Editor for Social Media



TODAY

1. Meeting learning needs to change clinical practice
2. The looming cliff for academic journals
3. Embracing digital innovation – for you and your patients



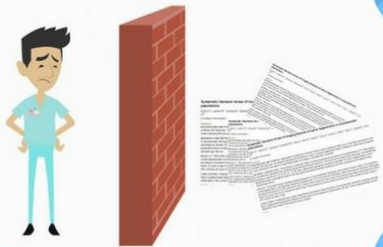
The 'Best Practice Guide to Conservative Management of Patellofemoral Pain': incorporating level 1 evidence with expert clinical reasoning

Christian John Barton,^{1,2,3,4} Simon Lack,¹ Steph Hemmings,¹ Saad Tufail,¹ Dylan Morrissey^{1,5}

4 BARRIERS TO KNOWLEDGE TRANSLATION FROM ACADEMIC JOURNALS

1

Article access



2

Difficulty in comprehension



3

Lack of reader engagement



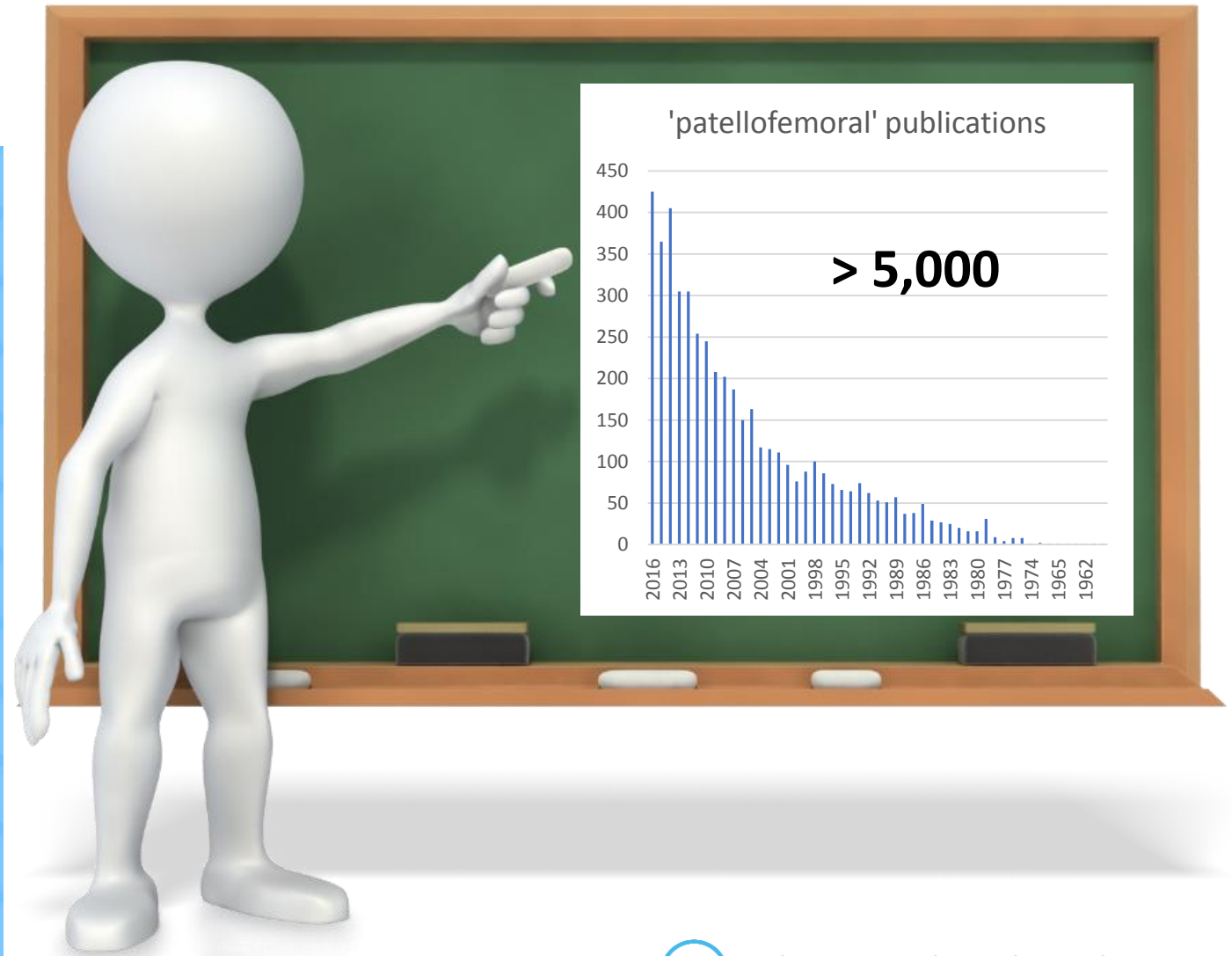
4

Time needed to consume text heavy format



Designed by
@fisioterapienet

Barton CJ and Merolli MA, BJSM 2017



c.barton@latrobe.edu.au

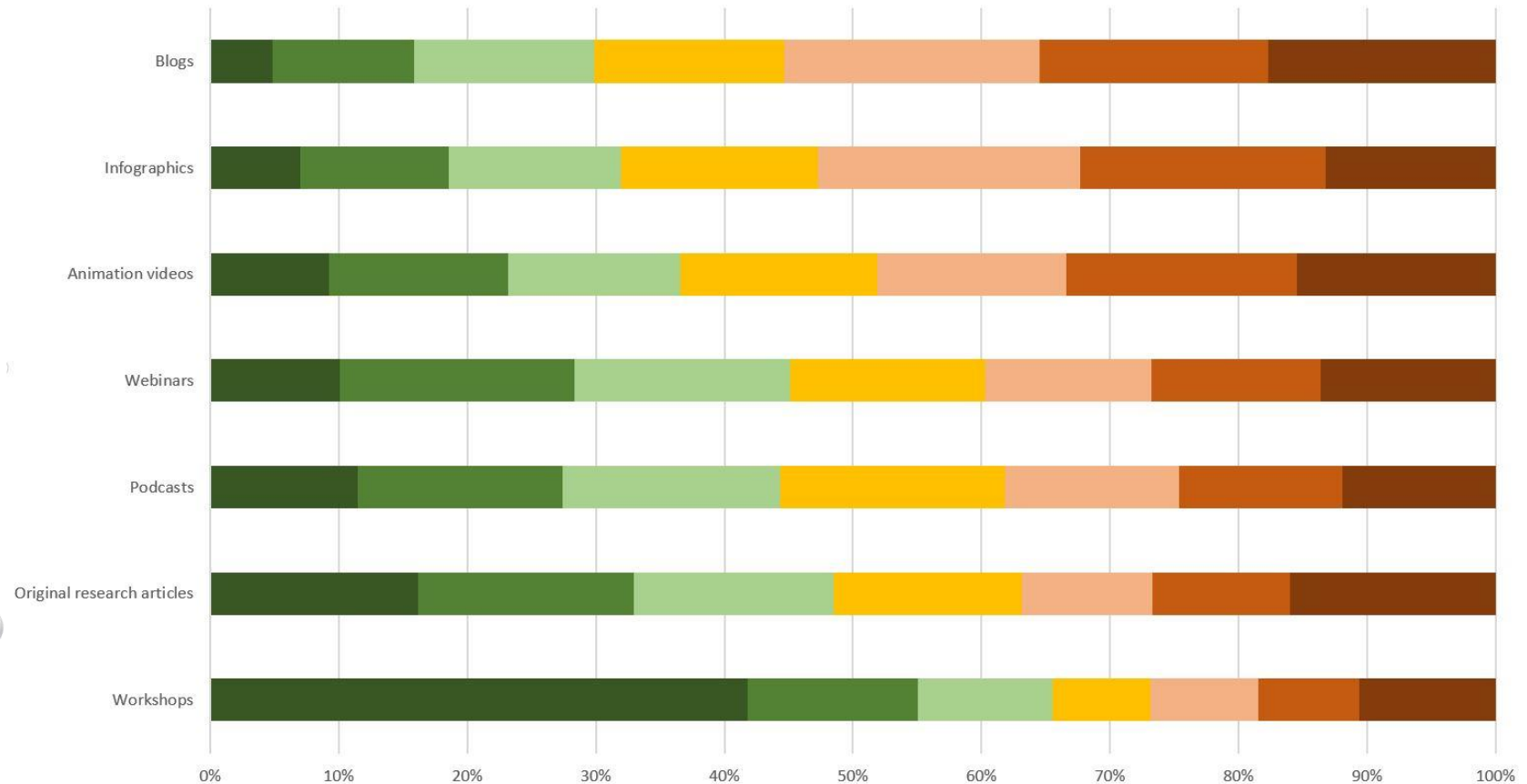


@DrChrisBarton

What do physiotherapists want?



Please rank in order your preferred resources to learn from (n=1675)



Physiotherapists want quality courses

“Online courses are helpful in terms of spreading knowledge in terms of time convenience but if I had to choose, I would always prefer to have an in-person training.”

“I much prefer doing a practical session.”

“Definitely courses are the best way because you get the interaction between other therapists. You get hands on. There’s usually some application.”



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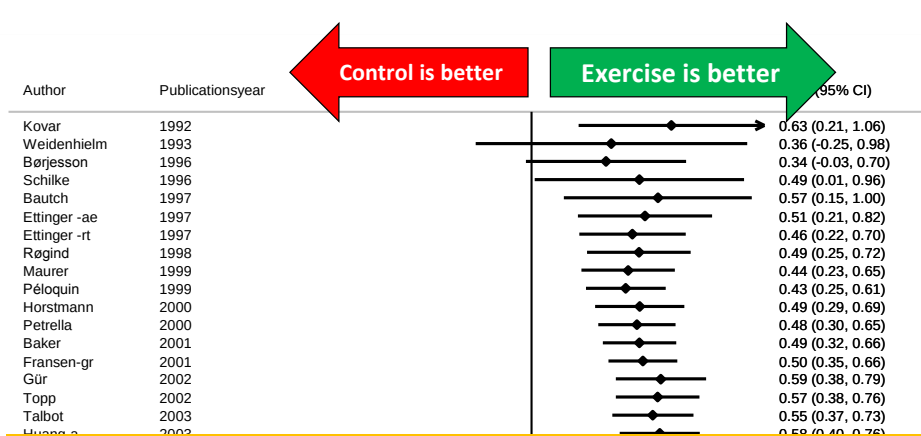
@DrChrisBarton



Welcome to GLA:D Australia

The best first treatment for hip and
knee osteoarthritis





“As of 2002 sufficient evidence had accumulated to show significant benefit of exercise over no exercise in patients with osteoarthritis, and further trials are unlikely to overturn this result.”

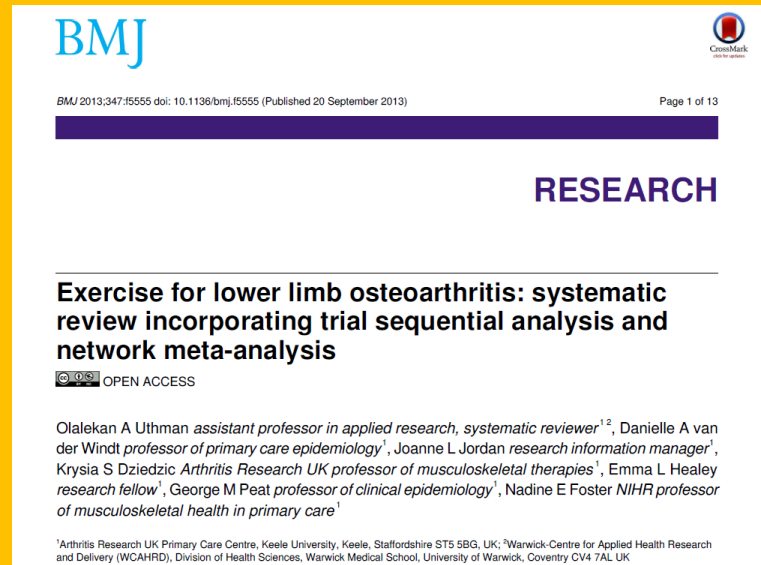


Figure by Carsten Juhl 2014



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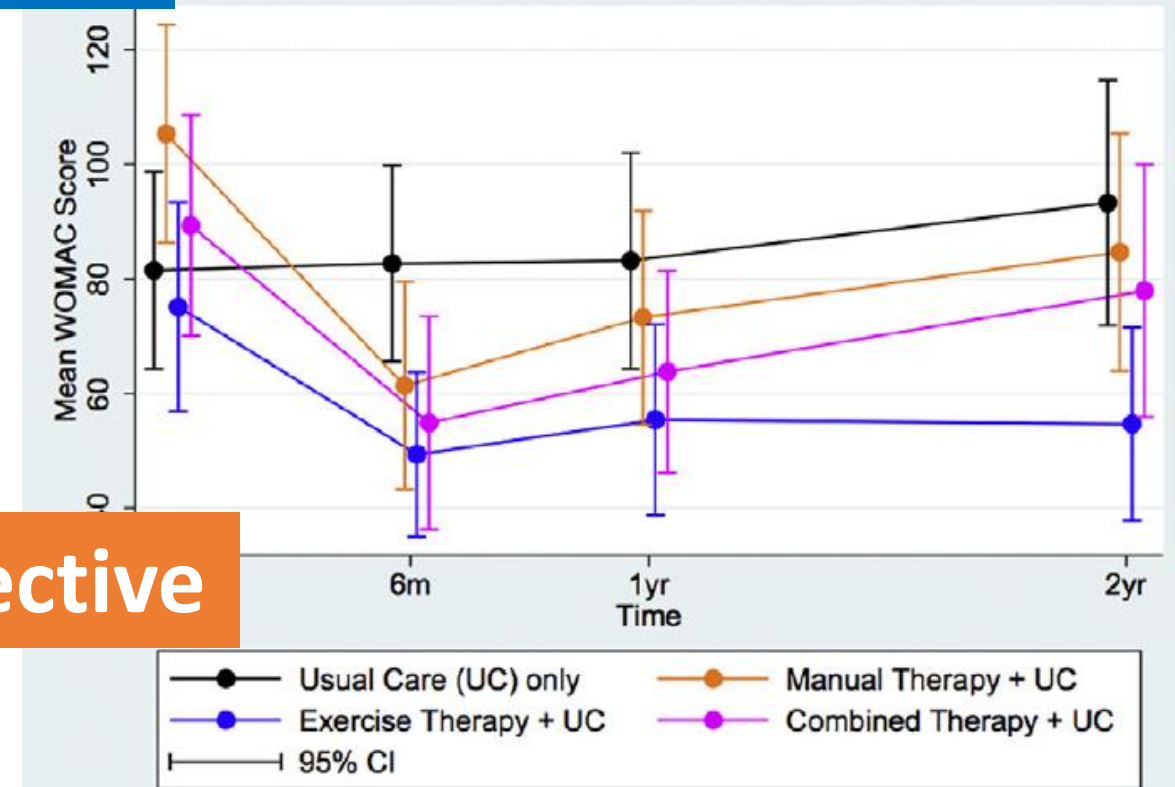
@DrChrisBarton



Incremental clinical effectiveness and cost effectiveness of providing supervised physiotherapy in addition to usual medical care in patients with osteoarthritis of the hip or knee: 2-year results of the MOA randomised controlled trial

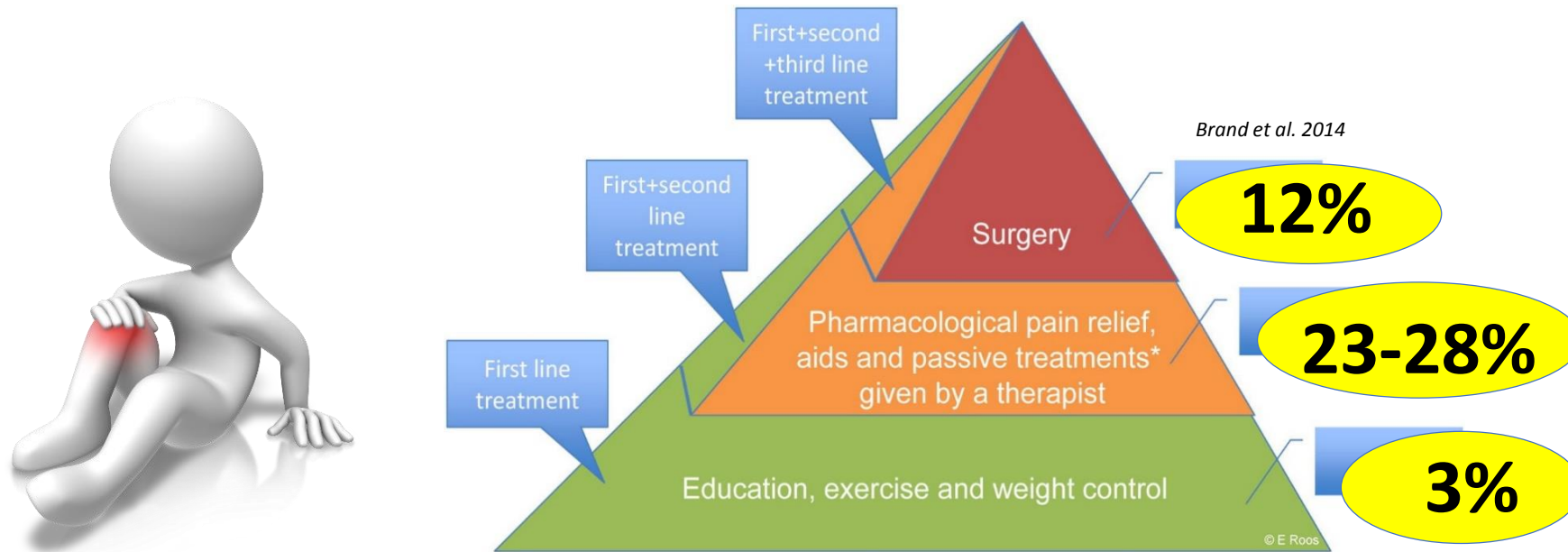
J.H. Abbott †*, R. Wilson †, D. Pinto ‡, C.M. Chapple §, A.A. Wright ||, For the MOA Trial team^a

Exercise-therapy is cost-effective



Manual therapy is not cost-effective

GP referral patterns for persistent knee pain (OA) in Australia



Imaging referred for 22% of the time!



Physiotherapists in Australia

	Baseline (n=78)
Aware of guidelines	38%
<u>Confident or very confident in:</u>	
Prescribing neuromuscular exercise	38%
Providing education related to self-management	79%
Providing education related to physical activity participation	68%
Discuss the importance of weight management	60%

And then there is what we do



RESEARCH ARTICLE

Open Access



Good Life with osteoArthritis in Denmark
(GLA:D™): evidence-based education and
supervised neuromuscular exercise
delivered by certified physiotherapists
nationwide

Søren T. Skou^{1*} and Ewa M. Roos¹

GLA:D®

**WE HAD 50+ RCT
SUPPORTING
EXERCISE THERAPY FOR
HIP AND KNEE
OSTEOARTHRITIS**

**CLEAR CALLS TO
ACTION FROM
MULTIPLE CLINICAL
GUIDELINES**

**3 YEARS
DISCUSSION WITH
HEALTHCARE
ORGANISATIONS**

**NOTHING CHANGED,
SO WE JUST DID IT...**

Designed by @fisioterapienet



**COURSE DEVELOPED
FOR CLINICIANS TO
HELP THEM DELIVER
EVIDENCE BASED CARE
INCLUDING EXERCISE
AND EDUCATION**

**5 YEARS ON TRAINED
1000+
PROGRAM DELIVERED
30000+ PATIENTS**



RESULTS INDICATE...

- ↓ SICK LEAVE
- 1 OF 3 STOPPED PARACETAMOL, NSAIDS & OPIOIDS
- ↓ PAIN 25% ON AVERAGE
- IMPROVED FUNCTION, QUALITY OF LIFE & PHYSICAL ACTIVITY



BORN IN DENMARK...

**...NOW EXPANDED TO CANADA,
AUSTRALIA AND CHINA**



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Discuss the importance of weight management	60%





Physiotherapists in Australia

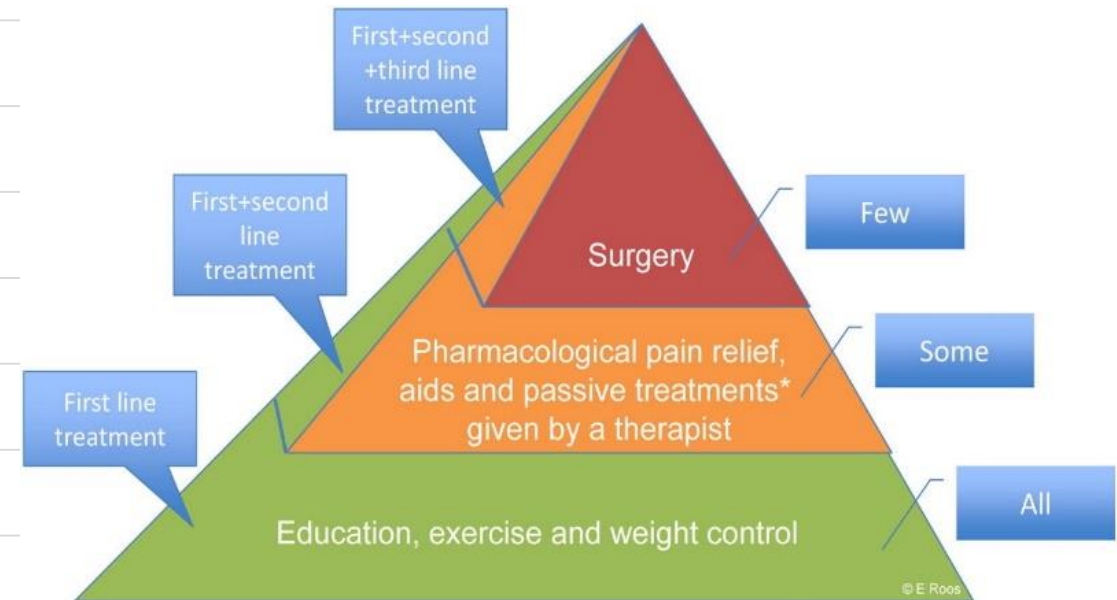
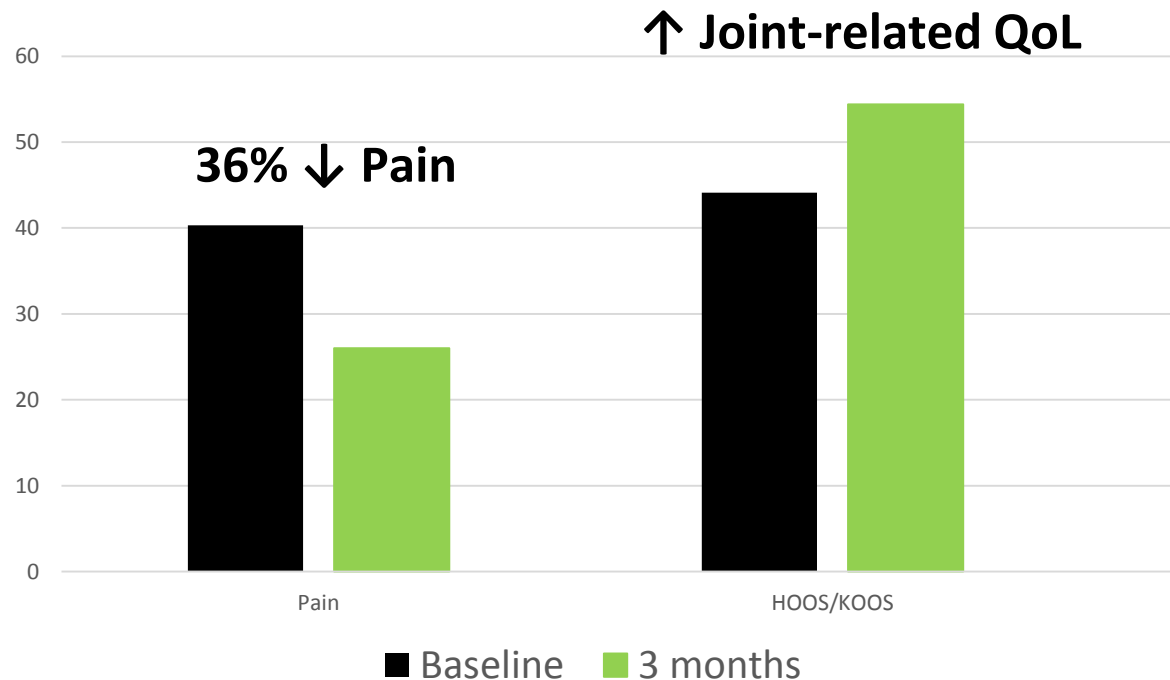
	Baseline (n=78)	12 month follow up (n=39)
Aware of guidelines	38%	81%
<u>Confident or very confident in:</u>		
Prescribing neuromuscular exercise	38%	90%
Providing education related to self-management	79%	97%
Providing education related to physical activity participation	68%	92%
Discuss the importance of weight management	60%	89%

69% implemented
the program
within 12-months



Patient level feasibility data in Australia (2017)

Hip/Knee osteoarthritis (n = 63)





GLA:D[®] can change surgery intentions

Do you have so much trouble and pain from your knee that you want to have surgery?

- 294/1159 say yes at baseline – 25.4%
- **59% who said YES at baseline change to NO at 3 months**



250+ sites in Australia



> 30 tutors

Big data is powerful

HOME OUR TEAM NEWS LOCATIONS PHYSIO EDUCATION



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Current journal model



Research completion

- Develop question and design
- Complete research or review
- Analyse data

Journal publication

- Write manuscript
- Submit to journal
- Peer review
- Address concerns
- Finalise paper and sign over copyright

350 years old



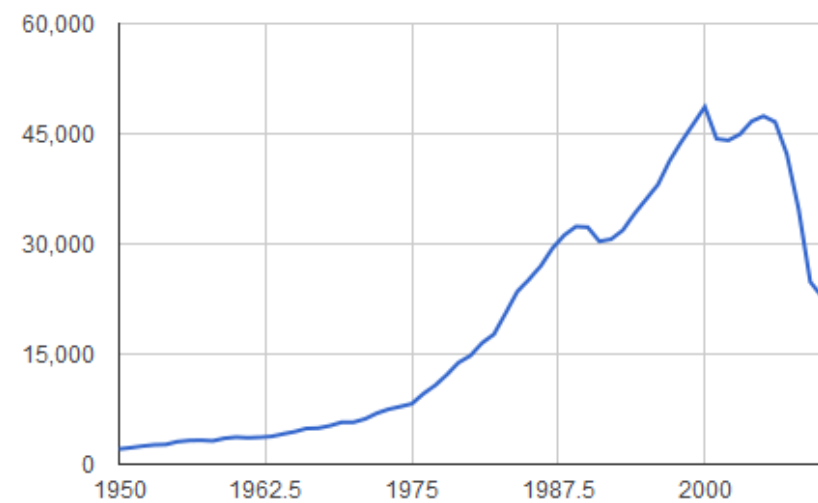
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U.S. print newspaper revenue (nominal)



What is the purpose of academic journals?



Who do they reach?



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28 May 2019

A peer reviewed case series

ARTHRITIS GAME-CHANGER

Stem cell treatment offers new hope to millions of sufferers

MAN WHO KIDNAPPED BRITISH BACKPACKER TO BE SENTENCED TODAY

SYD 19°

8.21



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I wrote a paper about the problem



4 BARRIERS TO KNOWLEDGE TRANSLATION FROM ACADEMIC TO

1

Article access

"I enjoyed reading your article, although as a journal editor, I was thinking that it could be kept for the library. It would be like the Christmas dinner." – anonymous editor

\$35 billion + Industry



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Designed by
@fisioterapienet



Barton CJ and Merolli MA, BJSM 2017

It is time to replace publish or perish with get visible or vanish: opportunities where digital and social media can reshape knowledge translation

Christian J Barton,¹ Mark A Merolli^{2,3}

1. Motivate the elephant

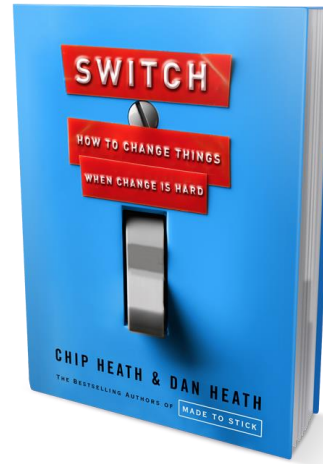
(e.g. desire to bridge knowledge gaps)

2. Direct the rider

(e.g. awareness of knowledge gaps)

3. Shape the path

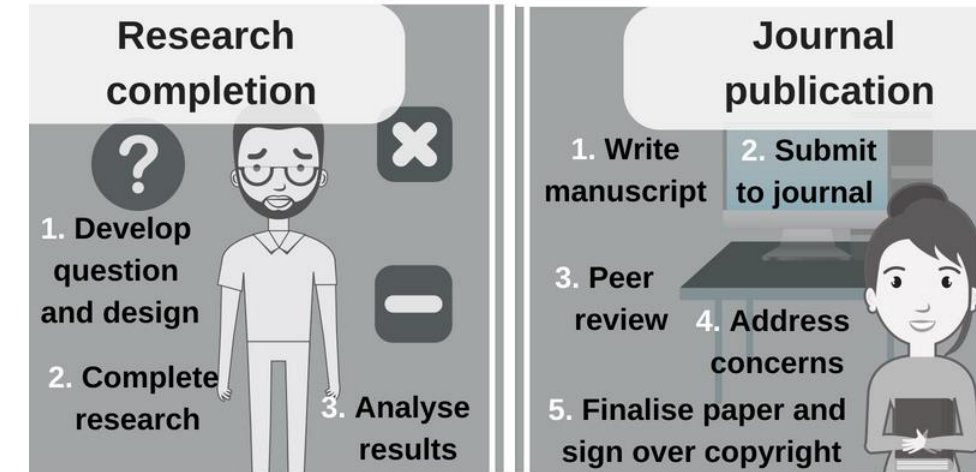
(e.g. optimise engagement with KT resources)



PROCESS TO IMPROVE
KNOWLEDGE TRANSLATION



TRADITIONAL STEP 1 AND 2



NOVEL STEP 3 AND 4



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How can WE ALL improve knowledge translation?



Let's look at the potential benefits of Step 3 – multimedia creation

We developed a comprehensive web-based education resource with an optional exercise program for people with knee cap pain



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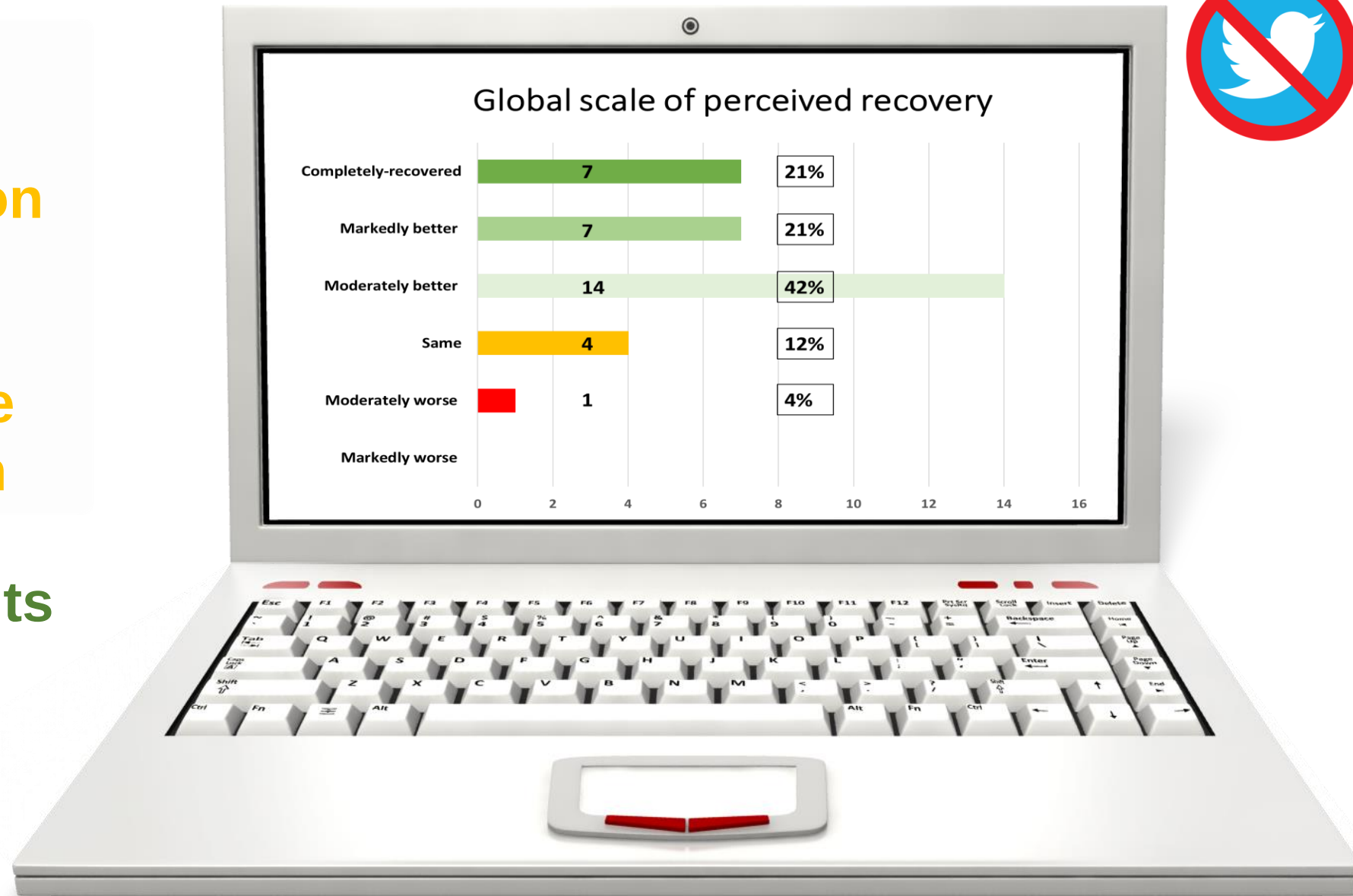
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We developed a comprehensive web-based education resource with an optional exercise program for people with knee cap pain

1 in 5 of participants may not actually need us at all



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How can WE ALL improve knowledge translation?

Research completion

- Develop question and design
- Complete research (study or review)
- Analyse results



Journal publication

- Write manuscript
- Submit to journal
- Peer review
- Address concerns
- Finalise paper and sign over copyright



Multimedia creation

- Blog
- Infographic
- Video
- Podcast
- Media release
- Etc.



Media dissemination

- Twitter
- Facebook
- Blog mailing list
- Other relevant social media platforms
- Mainstream





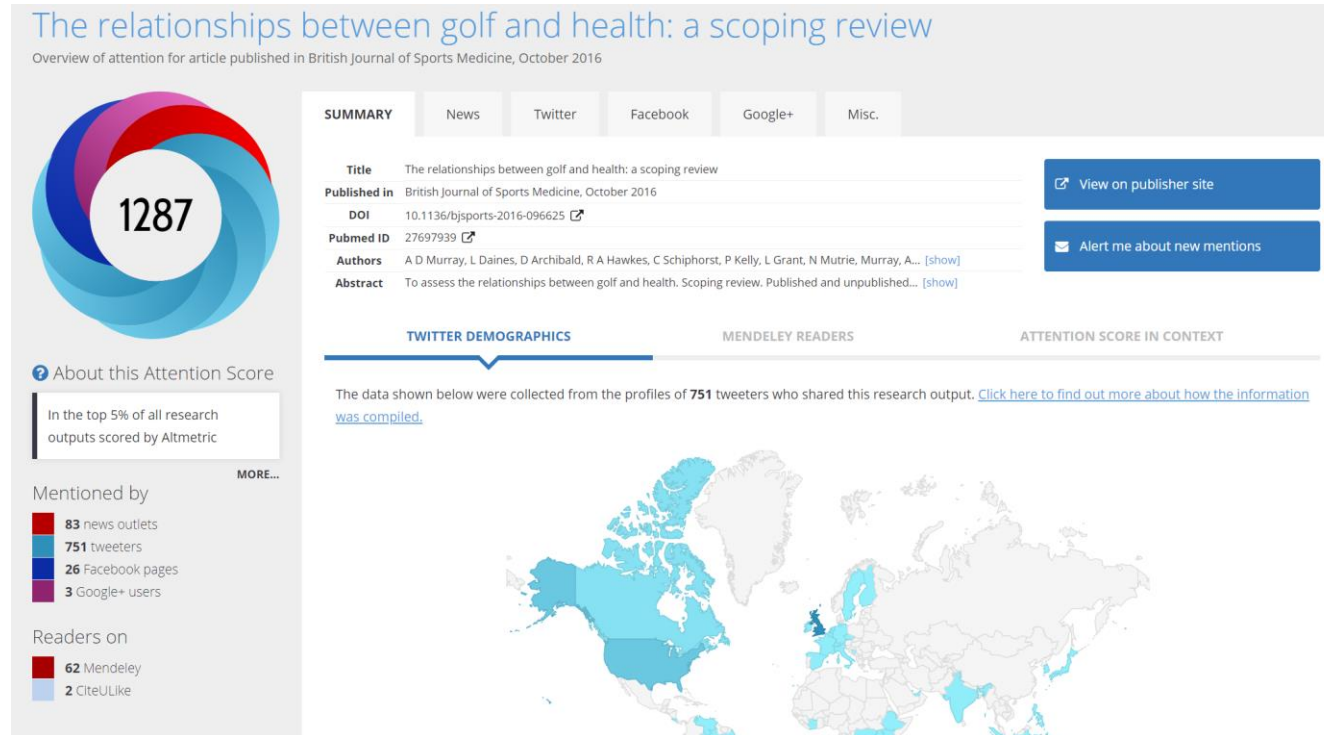
OPEN ACCESS

The relationships between golf and health: a scoping review

A D Murray,^{1,2} L Daines,³ D Archibald,⁴ R A Hawkes,^{5,6} C Schiphorst,¹ P Kelly,¹
L Grant,^{3,7} N Mutrie¹



Supportive Early Day Motion in the UK parliament



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EXERCISE - APRIL 6, 2016

Exercise is medicine for knee pain – Rhys's story

"I don't see myself having to need knee surgery for a very long time. I don't think I would have ever needed surgery in the first place if it could have been managed prior with a proper exercise regime"

Search our blog

'I lived on pretty much any pain medication I could get my hands on'



IMAGE

VIDEO

AUDIO

By the time he was 31, Rhys has had 11 knee surgeries. He explains how he went from severe depression due to the extreme pain, to hiking the Inca Trail.

Recommended

13 JUL 2018 - 3:02AM
Quiz: facts and myths on mental illness

12 JUL 2018 - 1:46PM
What does it take to be a survivor?

12 JUL 2018 - 1:49PM
Women in prison: histories of trauma and abuse highlight the need for specialised care

12 JUL 2018 - 6:26PM
In Baby Teeth, Links Between Chemical Exposure in Pregnancy and Autism

11 JUL 2018 - 1:41PM
'You are not alone': Lifeline seeks to reach out to Chinese community

12 JUL 2018 - 3:04PM
Attention!

Browse by

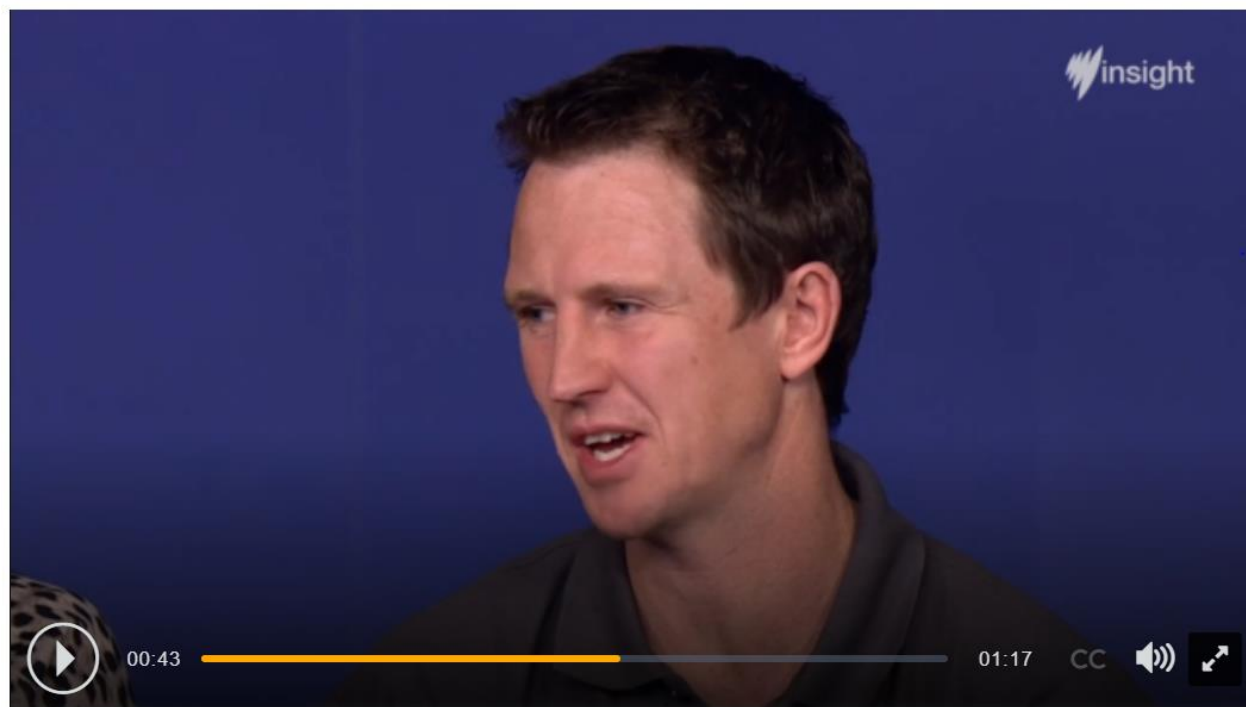


PROGRAMS



Taste le tour
with
Gabriel Gaté

MYTH BUSTED: Exercise isn't harmful for people with knee osteoarthritis



IMAGE

VIDEO

AUDIO

Advice to rest and avoid pain is commonly provided to people with knee and other joint pains - advice that is often wrong, and harmful.

Recommended

11 JUL 2018 - 11:19PM

First footage of Thai boys after traumatic cave ordeal

13 JUL 2018 - 7:19AM

New 'exercise pill' could be a game changer in fight against obesity

13 JUL 2018 - 8:33AM

High carb diet worse than high fat: study

12 JUL 2018 - 1:46PM

What does it take to be a survivor?

12 JUL 2018 - 6:26PM

In Baby Teeth, Links Between Chemical Exposure in Pregnancy and Autism

12 JUL 2018 - 3:04PM

Attention!

Browse by



PROGRAMS



TAKE HOMES

1. Researchers we are inherently poor at knowledge translation – lack of incentives
2. Change will come - researchers and health professionals must work together
3. Multimedia and online resources are powerful knowledge translation tools – embrace digital innovation



Today's slides and links: <http://bit.ly/wcspt2019>