PreKure™
prevention is cure

Making Sense of Research

Learn what and whom to believe when it comes to health research

This overview outlines some of the fundamentals in understanding nutrition, exercise and health research.

To fully upskill in making sense of science and research, enrol in PreKure's online course PK105: Making Sense of Research go to https://www.prekure.com/online-courses/

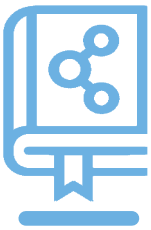
Prevention before cure.

PreKure is a social enterprise that exists to inspire the medical profession to become more focused on disease prevention.

The current health system is failing sufferers of chronic disease—we need Health Coaches to help solve the problem. By completing our online courses and becoming a PreKure certified Health Coach, you can support people in making the critical lifestyle changes required to dramatically improve their health and hauora/wellbeing.

Together we can change medicine. Prevention is cure. Lifestyle is medicine.

Understanding research



Every day, we are bombarded with media headlines giving us conflicting information - 'this is healthy', 'this is not healthy', 'this study says...', 'this expert says...'. How do we make sense of all of this? How do we decide what to believe? This is where having a basic understanding of science and research will really help.

An example is seeing an exposure, for example butter, linked with a disease, say cardiovascular disease, but delving deeper, we want to know whether butter actually causes cardiovascular decease.

The essence of science…

...observing the world, developing a belief or hypothesis, and then designing a study or looking up someone else's work to see whether this belief has evidence to support it. Depending on the results of this enquiry, the hypothesis is either confirmed or refuted and further refinement of the original belief is possible.

MINI SCIENCE GLOSSARY

- **Causation** The relationship by which an exposure leads to a disease or outcome.
- **Confounding** A shared common cause of an exposure and outcome.
- **Exposure** A behaviour, biological or sociological characteristic that may cause a particular disease or outcome.
- **Risk ratio or relative risk** The ratio of the risk of an outcome in an exposed group to the risk of an outcome in an unexposed group. The definition always implies a comparison of the risk of disease in two different exposure groups.
- **P-value** In a study which links an exposure with a disease, this statistic is the long run risk of getting the observed results or more extreme, if there is truly no relationship between exposure and disease (null hypothesis is true). Conventionally, a P-value of less than 0.05 (5% or 1/20 times) is considered to be evidence that the 'no relationship' hypothesis is false, and that there really is an association or link between exposure and disease.

The nuts and bolts of scientific studies

The basic building blocks of an epidemiological study are very simple. They consist of a population, an exposed and unexposed group, and a disease or health outcome. In a cohort study, perhaps the simplest type of observational study, a population of people who are at risk for a disease are defined, separated into two (or more) groups based on their exposure status, and the number of people who develop disease during follow-up is counted in each group. In the simplest case, the proportion of people who develop disease in each group is calculated and then summarised in a relative risk.

The big four study designs

- **Randomised clinical trial** – popular for testing health interventions, particularly drugs, where the active treatment is often compared to a placebo.
- Observational studies include **cohort study, case-control study and cross-sectional study**.

The holy grail of causation: Bradford-Hill criteria

Sir Austin Bradford-Hill was a famous statistician and epidemiologist, based in the UK in the 1950-60s. The epidemiological discipline was just taking off, and many causal debates were being had, about things like whether smoking causes lung cancer. Bradford-Hill developed a set of criteria, that can be described as 'scientific common sense'.

The Bradford-Hill criteria for causation are:

- **Strength of association**
- **Consistency**
- **Specificity**
- **Temporality**
- **Biological gradient**
- **Biological plausibility**
- **Coherence**
- **Experiment**
- **Analogy**

[I'm now] able to discuss and give my rebuttal to the constant and conflicting studies that are in the media.

Strength means how strong is the association between the cause and the effect? Is the exposed group at higher risk of disease than the unexposed?

Consistency is about reproducibility. Do different authors using different methods come to the same conclusions? Almost every study should support the association for there to be causation.

Specificity The more specific a link is between a factor and an effect, the bigger the probability of a causal relationship.

Temporality is a basic one included in cohort and trial studies – exposure should come before effect or disease.

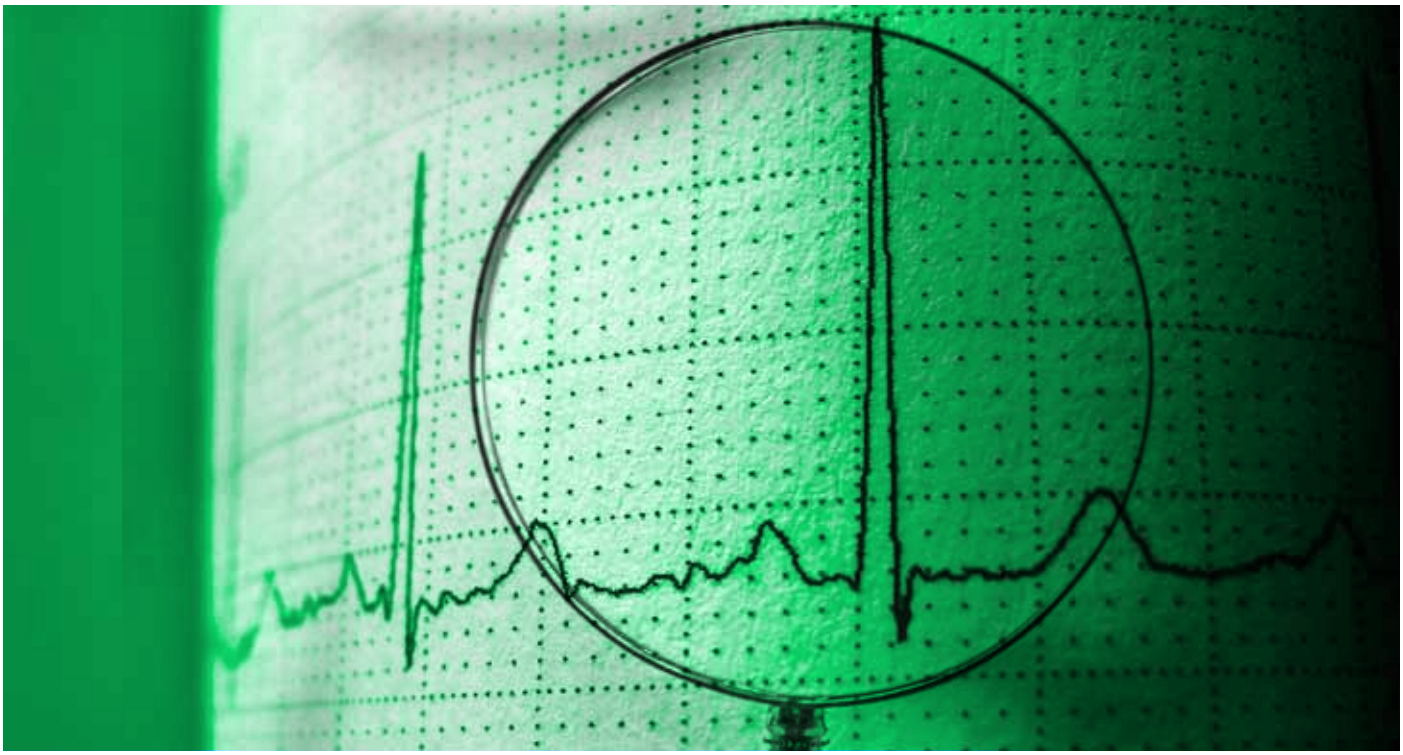
Biological gradient means if an exposure is causal, then we expect more exposure leads to more disease. A little exposure should result in a little effect, a large exposure should cause a large effect.

Biological plausibility relates to whether or not there is a known biological mechanism. For example, it is not biologically plausible that roosters cause the sun to rise, even though the two events are strongly related.

Coherence means that laboratory and epidemiological findings should line up.

Experiment as a measure relates to trials, which are the top of the evidence tree.

Analogy means the effects seen with similar factors. For example, talking about whether rheumatic fever is caused by scabies, it could be taken into consideration that post-streptococcal glomerulonephritis (a kidney problem) is very similar to rheumatic fever, and is known to be caused by scabies.



Online course PK105: Making Sense of Research

In this course, you will learn what and whom to believe when it comes to the latest nutrition, exercise, and health research. How do you know what is a good or bad interpretation of a scientific study? Why is it important to know the difference between correlation and causation? Learn the signs and symptoms of misleading research and understand the real science behind those sensationalised newspaper headlines. This course arms you with everything you need to know to be a credible and evidence-informed Health Coach, PT or nutritionist.

Sign up today at https://www.prekure.com/online-courses/

I have been challenged with this course and have immensely enjoyed learning something new. I now understand how to apply a critical lens to everything I read.

FAQs

Can I do the course even if I am not a PT or Health Coach?

Yes. This course is designed for those who work with clients and/or patients, teaching you how to change their behaviour and ultimately improving their health and wellbeing. You will also learn many tips and tricks that will help you and your loved ones personally as well. To date, we have had GPs, nurses, full-time mums, gardeners, IT specialists, and more enrolling on this course!

What are the benefits of doing the course?

You'll be equipped to cut through the confusion and understand which studies are actually backed by scientific evidence, and on the other hand, what is simply misleading research. You'll be introduced to the language of science and gain a basic understanding of concepts such as relative risk, P-value and confounding.

To enrol, go to PreKure.com/online-courses

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