



# MAKING SENSE OF RESEARCH – TYPES OF RESEARCH, LEVELS OF EVIDENCE AND ALL THAT...

By Odette Wood

Depending on how long ago, where you trained and what other study you may have done, learning about research may not have been part of your training and development as a massage therapist. While this article doesn't cover everything there is to know about research (there's plenty of books on that!), hopefully it will give you a basic introduction or refresher to the different types of research, how to distinguish between them and how evidence differs in quality.

## QUALITATIVE AND QUANTITATIVE RESEARCH – WHAT'S THE DIFFERENCE?

When it comes to research, there are two main types – quantitative and qualitative. Quantitative research refers to research that involves experiments, measurement, numerical data and statistical analysis. It generally involves a rigorous and controlled design and aims to generalise results to a larger population (Polit & Beck, 2014). If you see the term quantitative, think quantity – numbers, data. An example of a quantitative study is this study done by Elder et al. (2017) – Real-World Massage Therapy Produces Meaningful Effectiveness Signal for Primary Care Patients with Chronic Low Back Pain: Results of a Repeated Measures Cohort Study. <https://academic.oup.com/painmedicine/article/18/7/1394/3069964>

Qualitative research on the other hand is more about in-depth, exploratory research. It is more interested in patterns and themes. It involves collecting narrative information via interviews and focus groups to gather stories, opinions, attitudes and beliefs (Polit & Beck, 2014). If you see the term qualitative, think quality – rich, descriptive information. An example of a qualitative study is this study done by Smith, Sullivan and Baxter (2009) - The culture of massage therapy: Valued elements and the role of comfort, contact, connection and caring. <https://www.ncbi.nlm.nih.gov/pubmed/19632544>

There is a third type of research that combines the two. This is called Mixed Methods research. The point of this is that it allows both types of data – numerical and narrative, to be collected and examined in order to obtain a broader and more in-depth understanding of a topic (Polit & Beck, 2014). An example of a mixed methods study is this study done by Kania-Richmond, Reece, Suter and Verhoef (2015) - The professional role of massage therapists in patient care in Canadian urban hospitals – a mixed methods study. <https://bmccomplementalternmed.biomedcentral.com/articles/10.1186/s12906-015-0536-4>

## LEVELS OF EVIDENCE

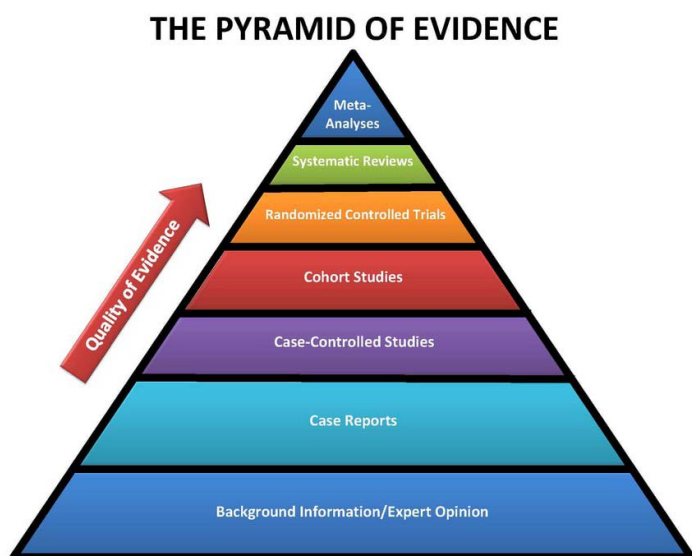
There are seven recognised levels of evidence and the main types of studies fit into a particular level based on the type of study and the strength and quality of that particular type of research. This table nicely shows the levels and the types of studies within (we will explore these more soon). As you can see, level I is the first and this contains the types of evidence that are considered to be the highest quality. As you move down the levels, the strength of the research (in terms of proving cause and effect) decreases. This is not to say that level six single qualitative studies are not well done or do not carry any weight, they have less strength than a large scale study because they represent just one study, as opposed to many, as with Meta-Analyses and Systematic Reviews.

Level of evidence (LOE)	Description
Level I	Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trial) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
Level II	Evidence obtained from at least one well-designed RCT (e.g. large multi-site RCT).
Level III	Evidence obtained from well-designed controlled trials without randomization (i.e. quasi-experimental).
Level IV	Evidence from well-designed case-control or cohort studies.
Level V	Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
Level VI	Evidence from a single descriptive or qualitative study.
Level VII	Evidence from the opinion of authorities and/or reports of expert committees.

Source: Retrieved from <https://libguides.winona.edu/c.php?g=11614&p=61584>

## HIERARCHY OF EVIDENCE

You might have seen this diagram before. Often referred to as the Hierarchy of Evidence Pyramid, it depicts the main types of research and the order in which they are recognised in terms of quality of evidence.



Source: Retrieved from: <https://www.ellismedlibrary.org/evidence.html>

### 1. META-ANALYSES AND SYSTEMATIC REVIEWS

At the top, and considered as the gold standard of evidence, is the Meta-Analysis. This is a technique that uses quantitative methods to combine and summarise results from many studies that have looked at the same or similar research question. It treats the results of a study as a single bit of information, so instead of the individual subject or participant in the study representing a single piece of information, it is the individual study that is the single piece of information. All the findings from many studies on the same topic are pooled and all the information is then analysed together, as it might be in a single study (Polit & Beck, 2014; Winona State Library, n.d.). An example of a meta-analysis is this study by Lee, Kim, Yeo, Kim and Lim (2015) – Meta-Analysis of Massage Therapy on Cancer Pain. <http://journals.sagepub.com/doi/abs/10.1177/1534735415572885>

A Systematic Review is a blending of research literature on a particular research question. It is very thorough and accurate. It involves systematically searching, sampling, collecting and summarising data on a large number of studies on a particular topic (Polit & Beck, 2014; Winona State Library, n.d.). A meta-analysis is actually a type of systematic review. An example of a systematic review is this study done by Bervoets, Luijsterburg, Alessie, Buijs and Verhagen (2015) – Massage therapy has short-term benefits for people with common musculoskeletal disorders compared to no treatment: a systematic review. <https://www.sciencedirect.com/science/article/pii/S1836955315000582>

The benefits of both meta-analyses and systematic reviews are that they are studies of studies and because of the number of studies that are brought together, they represent both a larger number of participants and this increases the reliability and of the evidence.

### 2. RANDOMISED CONTROLLED TRIAL (RCT)

This is probably the type of study that we most often associate with research. When you hear about studies like drug trials, this is the type of study used. An RCT involves a group of subjects (people in the study) who are randomly assigned to (generally) one of two groups – an experimental group who receive the intervention treatment e.g. massage therapy, and a control group who do not receive the intervention. They may get no treatment, usual care, a sham (fake) treatment, a different treatment, such as lying on a table listening to relaxation music, or a placebo. The control group serves as a comparison and provide a baseline against which the effects of the intervention treatment can be measured (Polit & Beck, 2014). A number of variables are measured in both groups before, during and after the intervention. After the experiment results from the two groups are analysed and compared to see if there were any differences between them and if any cause and effect can be established from the intervention (Polit & Beck, 2014). RCTs are useful when wanting to find out if a particular treatment works. An example of an RCT is this study done by Moraska, Schmiede, Mann, Butryn and Krusch (2017) – Responsiveness of Myofascial Trigger Points to Single and Multiple Trigger Point Release Massages: A Randomized, Placebo Controlled Trial. [https://journals.lww.com/ajpmr/Abstract/2017/09000/Responsiveness\\_of\\_Myofascial\\_Trigger\\_Points\\_to.7.aspx](https://journals.lww.com/ajpmr/Abstract/2017/09000/Responsiveness_of_Myofascial_Trigger_Points_to.7.aspx)

There has been quite a bit of recent discussion as to whether RCTs are a suitable type of study for Massage Therapy with one key issue being that it is very difficult to have a proper control group. If you want to read more on this issue, this article – A Commentary on the Role of Randomized Controlled Trials in Massage Therapy, by Baskwell (2017) found here <http://www.ijmb.org/index.php/ijmb/article/view/375/418> is a good place to start.

### 3. COHORT STUDY

A Cohort Study is a study that follows a group of people (called a cohort) over time. It measures outcomes for subsets of the people in the cohort to determine differences depending on the treatment they have received (Polit & Beck, 2014; Winona State Library, n.d.). These are usually large, expensive designs rarely used in Massage Therapy. This enables comparisons between the treatment group and the non-treatment group over an extended timeframe. A very good example of a cohort study is the Dunedin Longitudinal Study which you can find more information about here <https://dunedinstudy.otago.ac.nz/>

### 4. CASE CONTROLLED STUDY

A Case Controlled Study is a non-experimental study that identifies and compares people who have a particular condition (cases) e.g. migraine, against similar people without the same condition e.g. people who don't get migraines. The purpose of case controlled study is to determine if there are differences in outcome for those who have a particular condition, compared to those who don't. An



example of a case control study is this study done by Tali, Menaham, Vered and Kalichman (2014) – Upper cervical mobility, posture and myofascial trigger points in subjects with episodic migraine: Case-control study. <https://www.sciencedirect.com/science/article/pii/S1360859214000072>

## 5. CASE REPORT

A Case Report is a single participant study which involves looking at an individual client with a condition, asking a research question .e.g. what effect does regular massage therapy have on someone with depression, formulating and carrying out a treatment plan, then assessing the outcomes of that treatment to see what (if anything) changed. Their value is that they provide an opportunity to document novel (interesting) conditions, test and share clinical reasoning, treatment approaches, outcomes of treatment including side effects (Gopikrishna, 2010; Munk and Boulanger, 2014). They are great learning opportunities for both therapists carrying them out, and the wider community of massage therapists and as Munk & Boulanger (2014) note “Case reports provide the foundation of practice-based evidence for therapeutic massage and bodywork”. Ruth Werner mentions a number of good quality and interesting Massage Therapy case reports in her column later on in this issue so I won’t mention any specific ones here. Ruth’s column is well worth the read.

## 6. BACKGROUND INFORMATION/EXPERT OPINION

This type of evidence is the weakest in terms of quality. It includes things like textbooks and manuals which provides generalised information about a condition or treatment approach. While these types of information provide a good background and summary, providing they are written by recognised experts in the field, the information in them may be out of date by the time they are published

(Winona State Library, n.d.). Expert opinions have a tendency to be more subjective than objective, which means they cannot be relied on as solid evidence.

For more research literacy information and help, check out the 2006 article on levels of evidence by Menard and Piltch in the Massage Therapy Journal which can be found here <https://www.amtamassage.org/uploads/cms/documents/ResearchLiteracy.pdf> and the Book Reviews and Useful Sites and Links columns later in this issue.

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