Research Basics: Definitions, Methods, and Where to Begin

By Heather L. Corwin, PhD, MFA, Certified Rolfer™

If we knew what it was we were doing, it would not be called research, would it?

Albert Einstein

Introduction

When entering the research arena, the language and meanings can be dizzying. I recall being a young assistant professor (without a PhD) and having a tenured faculty member who had a PhD scoff at me after he asked, "Are you planning on presenting a qualitative or quantitative study?" and I replied, "What's the difference?" Well, after earning my PhD, I now understand the vast and never-ending difficulties that surround *research* and all it implies. In this article, I will attempt to share with you names and definitions of basic research as well as suggest some possible research strategies that might be used to research bodywork.

Where does research begin? Often, research starts with a thorough understanding of the current landscape of the focus of your study. For example, since we are Rolfing® Structural Integration (SI) practitioners, knowing any relevant studies already conducted is important before launching into a research study. The process of gathering information on previously published study findings is called a *literature review*. This process also insures your idea has not already been studied so you are not wasting your time. This process may also reveal some leaders in the industry. Another point of the literature review is to comprehensively encapsulate the seminal work done, any gaps in the literature, and what you hope to contribute to the field. Reading articles about the subject can also help inspire you when formulating your own study.

An important element to keep in mind at this point is what you would like to study and who has cleared a path for your work. Most of the articles that would be useful are in peer-reviewed journals that have been published. As a layperson, I was not aware of the difference between a magazine like *Massage & Bodywork* and a professional publication like *The Journal of Bodywork and Movement Therapies*. The first is a trade publication, the second is a scholarly journal. Arguments on which to base your literature review for your study would require citations from the scholarly journal world rather than blogs, trade publications, or websites. Scholarly journals adhere to rigorous standards, usually require an *institutional review board* (IRB) to oversee a study, and have competition when choosing who is published. So now that we know where to look to discover information about the areas we plan on studying, let us look at the study itself.

A study requires a leader. The head of a research study is a *principal investigator* or PI. The PI is in charge of the study, how the study is arranged, the execution of the study, and safeguarding the participants and data involved with the study. In other words, the boss. If someone else is working on the study who is not in charge but has primary responsibilities, he is often called a *co-investigator*. In the following, let us look at the elements often associated with studies that require people as participants, known as *human subjects*.

From caring comes courage.

Lao Tzu

Human-Subjects Research

When conducting research with human beings, there are a variety of safeguards in place that evolved as a result of historical abuse of power including war crimes and inhumane treatment of distinct populations. These safeguards are multiplied several times over if the study invites individuals under the age of eighteen to participate. Consequently, it is advisable to conduct your first study with adults in order to avoid the many levels of safeguards necessary for working with minors. (Working with children in studies is a whole other article.) Regardless of age requirements in the population your study requires, conducting research when not affiliated with a teaching institution that has an IRB is difficult. If you do not have an ethical review of your study and how this study is to be carried out, your findings will lack *rigor and standards*. In other words, an IRB oversees the researcher as a governing body to insure the safety of participants and the efficacy of the study. Plus, publishing the findings of the research without an IRB is extremely difficult because the rigors and safeguards supported by an IRB will not apply. An independent researcher can contract an independent IRB firm for a fee. However, it would be preferable to find colleagues who are affiliated with a university or college to be co-investigators thereby avoiding such fees, as well as the added benefit of having collaborators. As a Rolfing SI practitioner, you may find more support within the research realm including grant applications at www.rolf.org/research-intro.php. Now let us look at research design.

Quantitative and Qualitative Research

Let's begin with the difference between *quantitative* and *qualitative* research methods. Burns and Grove define quantitative research as "a formal, objective, systematic process in which numerical data are used to obtain information about the world. This research method is used to describe variables, to examine relationships among variables, [and] to determine cause-and-effect interactions between variables" (Burns and Grove 2005, 23). Another way of saying this is that an *instrument* is used to measure effects on all participants. "Quantitative research is the systematic, empirical investigation of observable phenomena via statistical, mathematical or computational techniques" (Given 2008). The measurements can then be examined using a variety of analyses (e.g., comparing before and after intervention, looking at gender, regressions, etc.). Thankfully, there are computer programs to execute the necessary analysis, so a researcher does *not* have to be amazing at math, she simply has to be able to identify the type of analysis most useful to apply to the data that is collected in light of the area being scrutinized. In order for a quantitative study to be rigorous, the results need to have *statistical power*, which means the study has enough participants to be generalizable to a larger population. Power usually requires a large number of people to participate. If power is not reached, the study can be a pilot study to determine the need for a larger study.

In contrast to needing a large number of participants in quantitative research,

qualitative studies usually require eight to twelve participants. The purpose of qualitative research is to determine hypotheses or insights to a problem through exploration of underlying motivations or opinion without imposing the researchers' opinion. Qualitative research primarily consists of interviews that occur in person, online (e.g., Skype), or, less often, through a written questionnaire. The interviews are then transcribed to mine the data (find the words or phrases) to create meaning. This process of finding meaning is broken down into themes and coding that will reveal the findings of the study (this is also known as *phenomenological analysis*). The researcher is looking at the parts of interviews to determine if any topics stick out or create a more refined or alternative aspect of larger themes. Though qualitative research can stand on its own, sometimes this process is used to determine directions to pursue in quantitative research. In the next section, we will examine what you need to consider to develop your study.

Necessary Steps for Any Study

Now let's look at what you would need to create for any research study. Here is a list of necessary documents and/or elements to create or address prior to submitting for approval from an IRB when working with human subjects (for both quantitative and qualitative research):

1. Identify research question or what you want to examine.
2. Collaborative Institutional Training Initiative (CITI) human subjects training certification (http://humansubjects.energy.gov/doe-resources/citi.htm); please note this document is required for professors and those working within federal jurisdiction (PIs who are working under a federal grant or federal auspices), but is not required of laypeople.
3. Decide research method and analysis.
4. Determine valid and reliable instrument to measure the identified item and/or list of questions to be asked to participants.
5. Recruitment letter.
6. Informed consent.
7. Safe and protected place to store data for a minimum of three years (to maintain confidentiality and protect data).

Now let's look at the steps necessary to formulate and prepare to conduct a study. Here is an example of a quantitative approach a Rolfer might use to examine if Rolfing SI has an impact on anxiety. First, I would have to identify the problem I would like to examine – can Rolfing SI change anxiety levels? The research purpose and research question might look like this: "The purpose of this study is to examine the effects of Rolfing SI on clients who are identified with high levels of anxiety. Does Rolfing SI decrease levels of anxiety?" The parts to the question include two types of *variables*. "A variable is an object, event, idea, feeling, time period, or any other type of category you are trying to measure" (https://nces.ed.gov/nceskids/help/user_guide/graph/variables.asp). An *independent variable* remains unchanged by anything that is outside of it (e.g., age, gender) and focuses on causes or the reason for any variation in the findings. The *dependent variable* in this study example is anxiety level, which is the measurement I am looking at to determine if the intervention (Rolfing SI) has any impact. So now I have a research question. I then figure out how I'm going to formulate the study to best answer this research question.

The exploration I undertake to determine the execution of the study includes:

- What can I look at to most efficiently answer my question? Should I look at anxiety levels over time or through one intervention/Rolfing SI session? Should I be the singular Rolfer or should I involve other Rolfers? Do participants need to be new to Rolfing SI to control for lasting effects or should that be another group? Etc.
- Since I'm going to be looking at impacts of Rolfing SI, how can I best utilize participants? What are the activities I want participants to do? Are participants to experience Rolfing SI once or several times? How many tests should a participant take to determine anxiety levels? With these questions, what is the best way to avoid attrition? Etc.
- What are the potential difficulties for participants in regards to participation? Are they going to be my clients or someone else's? Do the participants have to be first-time clients? Do the participants have to identify as high anxiety? If the participants have high anxiety, how do I safeguard their participation in regards to psychological well-being? What are the risks of participation? Etc.

With so much possible *attrition* (leaving the study before its conclusion) of participants over time, I would choose to limit the visit for the potential participant to *one* session. The advantage to one session as opposed to ten sessions is the fact that people will drop out of the study for a variety of reasons, just as many people do not complete their Ten Series. Here, I am sacrificing the possibility of more data across time (duration and multiple sessions with each participant) for data across a wider span of people/participants (more people can participate because we're only looking at one session). Plus, if I am the only Rolfer performing the Rolfing SI in the sessions, my time is limited. Added to that, if the person is *self-selected* to participate (they sought out Rolfing SI, you didn't *randomly* invite a cross section of society to participate), your study is already not as rigorous as it could be if the sample (of participants) is random. After I have decided on a structure for my study, I then run the numbers and find the *power* or number of participants necessary to make the sample size of my study generalizable to the public at large. In the following paragraph, we'll look at how to find an *instrument* to measure the dependent variable (the focus of the study: anxiety).

When looking for an instrument to be used for measuring, be sure to examine how often and effectively the instrument has been used. What's important when choosing an instrument is to insure it is *reliable and valid*, which means it has been proven to measure what it's designed to measure consistently over time in more than one study. If an instrument has been published, that can imply validity, but not always reliability. Some people do create an instrument, but doing so is incredibly difficult and requires a very large number of participants to become reliable and valid. When beginning research, I urge you to use available instruments rather than creating one. In the beginning of conducting research, focus on efficiency and on learning how to conduct research, because the rigors involved in research are demanding enough.

For our Rolfing SI study, I look for an instrument to measure anxiety to qualify my participants as people who identify as having more than average anxiety. This instrument will be used to measure anxiety *before and after* the Rolfing SI

session. Because I'm familiar with anxiety measurements, I would most likely use the Beck's inventory (a reliable and valid instrument). After deciding which instrument to use, I then get permission to use the instrument. This process may be as simple as getting permission on the website with the instrument being free. However, you may have to pay for use of the instrument as well as pay to have the data run by a statistician after data collection – and any variety of situations between these two examples.

Then, you create your *participant recruitment letter*, which outlines your study, what a participant is required to do, criteria to participate, exclusion criteria, any potential risk that may result in participating in the study, and how to contact you, the researcher. This letter is then followed up with or accompanied by an *informed consent*, which is the agreement between you and the participant restating much of what is said in the recruitment letter and including how the identity of the participant will be protected (anonymous vs. confidential).

When all of these documents are complete and you have formulated your study, you apply to an IRB for permission to execute your study. The IRB will address any discrepancies, typos, information gaps, or flaws in your approach. This process may take a number of repeat applications with amendments to the study and/or materials in order to comply with the rigors of the IRB. Each IRB is different in its turnaround time in considering proposals. Most IRBs will have a clearly defined length of time between each submission. After getting approval to work with human subjects from an IRB, the recruiting of participants begins!

In your IRB proposal, you will have clearly outlined how you plan to recruit participants. This may be as simple as inviting anyone who contacts you for a Rolfing SI session to join the study, or posting a flyer in your waiting room, or *snowball sampling* (asking people who ask people, posting on Facebook so others post and share, etc.). There are many ways to advertise and find your participant pool. Staying with the example study of anxiety and Rolfing SI, contacting local therapists whose expertise is anxiety disorders is a sound and practical choice. Any centers that have groups where people who identify as anxious might also be strategic. In your study plan, you will have identified what the risk to the participant is as well as the possible value. If Rolfing SI is shown to decrease anxiety after just one session, there is value in that. However, a researcher cannot make declarations based on what she hopes to find. A reasonable benefit could be reduction of the cost of a Rolfing SI session if the client participates in the study. Incentive for participation in a study is common practice and should not be dismissed when looking at the larger picture of the study as a whole. If a researcher is not able to entice participation, there will be no study. Next we will look at how to articulate the weaknesses in the study to clearly demonstrate awareness of imperfections in the process.

The area in the study that admits the flaws in the executed research process is called *limitations*. This is the moment of truth where the researcher names every element that was not controlled for or ideal in the research. For example, in our proposed study, we would not have a truly random sample. The people who participate may have identifiable characteristics like disposable income that may not be generalizable to the larger population. Another challenge is only looking at one Rolfing SI session, which may not accurately represent the impacts of long-term Rolfing SI work over time with people who identify as having medium or high anxiety. Additionally, if only one Rolfing SI practitioner is applying the intervention, that could be a confounding factor (a variable that interacts and correlates with the dependent and independent variables, which may affect the outcome). The beauty of research does not live so much in the purity of the model used, it relies on the integrity of the researcher to name all the moving parts that would or could impact the outcome(s) of the study. Hold on to this idea. By naming the challenges faced, the researcher heads off critical dismissal by acknowledging the limitations. By admitting these, the researcher is then free to move on to the discussion section of the study.

The *discussion* area of the study is the section in which the researcher is able to extrapolate meaning from the information the data produces. Deductions can be made here by the researcher so long as the data supports the conclusions. In this section, the researcher is able to share ideas inspired by the data. If no correlation is found between the intervention and any impacting results, like a decrease in anxiety after one Rolfing SI session, a researcher could talk about how future studies that look at a series may be useful to determine if a number of Rolfing SI sessions do impact anxiety in clients. If factors like age and gender are used, there may be factors that separate those who are impacted by Rolfing SI sessions and those who are not. This is where demographic information can be useful if the study is looking at correlational relationships. A *correlation* is found when one variable is increased or decreased by another variable; here there is an implied relationship. This section ends with the researcher suggesting future research based on the findings in the study.

> *The beginning is the most important part of the work.*
>
> Plato

Conclusion

The world of research can be a polarizing and intimidating place, but by identifying what you want to examine, you can contribute and make sense of our world. There are many books and resources that are useful for beginning research. I urge you to start with what excites you and evolve that into a question to answer as simply as possible. From there, a researcher is unstoppable!

Bibliography

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