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Frontiers

### Experimental and Quasi-experimental Designs in Yoga Studies: Review and suggestions for Prospective Yoga Research Scholars

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#### ABSTRACT

Researchers have shown a great interest in empirical studies, review and meta-analysis publications on yoga from the last few years. This paper aims to review and simplify some of the common research designs that can be implemented in yoga as a practice, yoga for physical fitness and health function. Most of the studies involve yoga and its effects on fitness, health and psychiatric and medical conditions. These include frustration, intelligence, stress, obesity, fitness components like strength, flexibility, blood pressure, low back pain, asthma, diabetes, balance so on and so forth. It is important to understand that whether such studies have followed a proper yoga protocol, are they experimental or quasi-experimental designs or not. Whether there was control groups involved or not etc. As on date it is found that more randomized controlled studies are needed in which yoga is compared to active exercise groups. Physical and mental health benefits of yoga apart, it makes it ethically questionable to assign participants to inactive control groups. Shorter sessions need to be investigated for cost-effectiveness and for daily self practice or practice under controlled conditions by a qualified yoga instructor. It is important to understand that paper pencil tests that are implemented may not be much reliable and understandable when they are used with rural population and children below 13 years of age. It is also pertinent to conduct productivity audit of studies so that the cost involved in studies can be justified and to decide upon the course of action with regard to research designs that are model best practices that can be replicated by future researchers in yoga.

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Yoga has been practised as a fitness exercise, for general health, as a therapy and many other applications. Yoga and related research studies have gained momentum in various universities and colleges in the recent past while pursuing

masters and other research degrees. There is no doubt that Yoga has emerged as inter disciplinary field mainly concerned with health and fitness of masses and school children not only in India but all across the

world. People are desperately looking forward to a good teacher who is not only good in communication skills but also in yoga research study. It is neither easy nor difficult to do good yoga research because every field is unique in itself and an upcoming discipline of yoga research has a lot of scope especially in the applied and inclusive settings. A research design is essentially a systematic blueprint that guides the collection and analysis of data. This write up is delimited to two main types of designs prevalent in Yoga studies that have been reviewed – Descriptive and experimental. Descriptive research focuses on how something works, whereas experimental research emphasizes what works.

#### A. **Descriptive Research**

**Designs:** Descriptive research includes ethnographic studies and case studies among others. Studies often focus on understanding how a particular yoga program is implemented and how participants perceive their experiences and outcomes. These studies typically make use of qualitative information, such as client feedbacks, written responses, interviews and focus groups (high BP patients, back pain patients). A yoga teacher may use qualitative data to research the fluctuations in yoga asana performance. There the teacher would conduct interviews and observations in order to view the practitioner's behaviour and conclude the research. This type of work takes place in natural settings in most yoga classes (outside of a lab), so it has good external validity because it is more realistic without the subjects (practitioners) becoming conscious about they being tested/evaluated to a particular task thus giving a sound advice to other yoga instructors as well.

For example, in a study on the impact of yoga tourism on tourists visiting Kerala (Ambili K., Guest Lecturer, Department of Travel and Tourism Management, T K M College of Arts and Science, Kollam, Kerala, India, 2016) "The study delineates the major reasons that increase the suitability of Kerala for yoga practice, the source of information about destinations in Kerala, the kind of tourism which are preferred to be combined with yoga trips,

and how long have the tourists been doing yoga in their lives and the impact of yoga in their lives. The study was carried out by a descriptive research design based on survey method. Averages, percentages, chi-square test and factor analysis were used for analyzing the study. The result showed that traditional system of yoga was the major reason for suitability of Kerala for yoga practices, friends, relatives and travel agents remain key persons in giving information to the yoga tourists, and yoga has a high positive impact on tourists' lives.

- **Quantitative descriptive studies:** These often use numeric data to examine the number and type of people who participated in a program. Data may be used to loosely interpret whether an individual's initial scores differ from his or her final scores after an intervention.

Example: A study entitled "Feasibility, Acceptability, and Effects of Gentle Hatha Yoga for Women With Major Depression: Findings From a Randomized Controlled Mixed-Methods Study" (Patricia Anne Kinser et.al.). Abstract: "Major depressive disorder (MDD) is a common, debilitating chronic condition in the United States and worldwide. Particularly in women, depressive symptoms are often accompanied by high levels of stress and ruminations, or repetitive self-critical negative thinking. There is a research and clinical imperative to evaluate complementary therapies that are acceptable and feasible for women with depression and that target specific aspects of depression in women, such as ruminations. To begin to address this need, we conducted a randomized, controlled, mixed-methods community-based study comparing an 8-week yoga intervention with an attention-control activity in 27 women with MDD. After controlling for baseline stress, there was a decrease in depression over time in both the yoga group and the attention-control group, with the yoga group having a unique trend in decreased ruminations. Participants in the yoga group reported experiencing increased connectedness and gaining a coping strategy through yoga. The

findings provide support for future large scale research to explore the effects of yoga for depressed women and the unique role of yoga in decreasing rumination.

Descriptive research is often used when researchers are studying a new program or intervention and its benefits and are less concerned with statistical results. Experimental studies, on the other hand, systematically test the relationship between a specific program or programs and a predetermined set of outcomes.

## **B. Experimental Research Designs in yoga:**

1. **Randomized Controlled Trials:** Experimental studies in yoga and naturopathy are used to systematically test the effects of a particular yogic intervention/program. The most durable of experimental designs is the randomized controlled trial (RCT). Using this approach participants have an equal likelihood of being randomly assigned to either a comparative match group or a treatment group. Treatment and CM group participants are matched on a number of dimensions (e.g. age, gender, health/fitness level, years of practice or training, lifestyle, social-economic status so on and so forth) to make sure that the groups are relatively equivalent to each other (uniformity). The purpose of random assignment is to attempt to control for extraneous factors, or covariates (e.g. age, sex, health level, level of fatigue) that may unduly bias the results of a study. Most experimental studies divide participants into two or more groups. The treatment group (often called the experimental group) refers to the group of those participants who receive the primary intervention (i.e. yoga program or a particular in residence dietary regimen). Studies may have one or more of these groups, depending on the research objectives, however yoga researchers are typically interested in comparing a particular yoga program to a “no yoga” control condition.

The control group refers to those who are not invited to participate in the active condition under investigation (e.g. yoga program) as part of a study. While many

assume that control groups (CMG) are passive and do not receive any type of intervention, this is often not the case. Many studies use “active” controls.

Example: A study comparing a yoga group to both a fitness schedule and to a no treatment condition. In this case the yoga group receives the treatment, the fitness group is an active control group that receives an exercise intervention, and the no treatment group receives no special instruction. Both the fitness and no treatment groups are considered control groups in this case. The use of a fitness group as a control allows researchers to assess whether differences between groups are related to fitness in and of itself, or the act of practicing yoga protocol.

Randomized studies can use either a ‘blind’ or ‘double blind’ approach. In double blind studies, neither researchers nor participants know which condition (group) a participant has been assigned to. It is not easy to conduct double blind yoga research, as those engaged in practices that resemble yoga are likely to assume that they have been assigned to a yoga condition. It is much easier for an experimenter to have no idea as to group assignment, unless the experimenter is both the yoga instructor and the researcher examining the data. This is not an ideal situation, and should be avoided as far as possible.

## **C. Quasi-Experimental Designs:**

Quasi-experimental designs are similar to randomized controlled trials in that numeric (quantitative) differences between intervention and control groups are emphasized. Unlike RCTs (Randomised Controlled Trials) however, these studies often use “convenience samples” or volunteers. In this approach, experimental groups often receive the yoga program as part of the formal study, and controls are placed on a waitlist and offered the program shortly after the formal research is completed.

Participants in these studies are not randomly assigned to either a treatment or

control group. This means that the two groups may differ greatly on one or more key dimensions (e.g. age, sex, prior yoga experience, health status), which may significantly impact group differences and statistical outcomes. It is critical to examine whether the treatment and control groups differ at baseline when interpreting the results of these studies. Generalizations in such studies are not possible and errors are likely to occur making it less reliable

Example: Effects of yoga on flexibility and balance: a quasi-experimental study (Shah Noman Md Iftekher, Md Bakhtiar, Kh Shafiur Rahaman. Aim of this research was to study the effect of yoga on flexibility and balance among shooting trainee athletes. 20 athletes took part in this study (10 in yoga group and other 10 in non-yoga group). Regular yoga sessions were being conducted early morning biweekly over a period of six weeks. All the participants were allowed to take part in regular training session, while only yoga group took part in additional yoga session. Measurements of flexibility and balance including Sit and Reach (SR) test and Stork Stand (SR) test were taken immediately before and after the yoga training period. Independent t-test and paired t-test were used to determine the significant effect of yoga within and between the groups before and after yoga training. Sixty percent of participants were male. Participant's age was between 12-17 years. All of them had normal level of BMI. Significant improvement were

observed in the yoga group for flexibility (SR,  $P=0.017$ ) and balance (SS,  $P=0.004$ ) during within group comparison. No significant improvement was seen for flexibility and balance in the non-yoga group. Between group comparison (Yoga and Non-yoga) also shows significant enhancement in both flexibility (SR,  $P=0.018$ ) and balance (SS,  $P=0.021$ ). The findings helped the researchers to conclude that regular yoga training may improve the balance and flexibility of shooting athletes even within short period of time (6 weeks), can also improve the athletic performances that demands high flexibility and balance.

### Conclusion:

Government is aptly making much needed efforts in the right direction to promote yoga that is an age old practice for the growth and development of mankind. In this emerging field it is essential to form multidisciplinary alliances between researchers and yoga teachers and therapists so that we can share our knowledge in the service of creating a strong evidence base for the use of yoga as a healthy lifestyle and as therapy. Although yoga research has grown exponentially in recent years, we are only now beginning to see studies that consistently make use of rigorous research designs and methods. Even though the field of yoga research has a long way to go, the future of systematic yoga researchers and teachers is bright.

### References:

1. <http://www.mind-bodytherapy.com>
2. [https://en.wikipedia.org/wiki/Correlation\\_does\\_not\\_imply\\_causation](https://en.wikipedia.org/wiki/Correlation_does_not_imply_causation)
3. <https://www.khanacademy.org/math/probability/scatterplots-a1/creating-interpreting-scatterplots/v/correlation-and-causality>
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3474303/>
5. Md Iftekher, S., Bakhtiar, M., & Rahaman, K. (2017). Effects of yoga on flexibility and balance: a quasi-experimental study. *Asian Journal of Medical and Biological Research*, 3(2), 276-281.

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