

Guidelines for determining Research area.

This guideline is prepared for the purpose of distinguishing between the research area of Science and Non-Science. It will be used as a guide for lecturers, postgraduate students and the Postgraduate committee of the Centre for Sport and Exercise Sciences.

1.1 General and Specific Definition

1.1.1 Science

Science studies the natural phenomena where events can be observed, measured, and tested by scientific methods. Here we assume that the universe is orderly, reasonable, and testable

There is a well-defined naturally occurring cause (mechanism) which explains why or how a natural event (phenomenon) occur and is always subject to change (tentative, uncertain)

There are typically 6 Criteria of Science which are:

1. **Consistent:** results of repeated observations and/or experiments concerning a naturally occurring event (phenomenon) are reasonably the same when performed and repeated by competent investigators.
2. **Observable:** The event can be observed and explained from using basic human senses or to extensions of the senses by such things as electron microscopes.
 - If the event cannot be reproduced through controlled conditions, natural evidence of the event's occurrence must be available for investigation.
3. **Natural:** A natural cause (mechanism) must be used to explain why or how the naturally occurring event happens.
 - Scientists may not use supernatural explanations.
4. **Predictable:** The natural cause (mechanism) of the naturally occurring event can be used to make specific predictions.
 - Each prediction can be tested to determine if the prediction is true or false.
5. **Testable:** The natural cause (mechanism) of the naturally occurring event must be testable through the processes of science, controlled experimentation being only one of these.
6. **Tentative:** Scientific theories are subject to revision and correction, even to the point of the theory being proven wrong.

1.1.2 Non-science

Non-science is an area of knowledge which does not meet the criteria of science (CONPTT). Their topic areas may be very logical and based on good reasoning, but simply do not fall within the realm of science. They would include any belief system, e.g., religious beliefs, philosophy, personal opinions or attitudes, a sense of esthetics, or ethics.

1.2 Criteria

In order to identify the area of research, the following criteria will be assessed

1. Field of Study
2. Topic
3. Research objectives
4. Methodology

The field of study will be given greater weightage followed by Topic, Research Objectives, and Methodology.

1.2.1 Field of Study:

This criterion plays a major (Dominant) role in deciding the Area of Study. The size of the field (in words below) provides the weightage and guide for this decision

Area of Science:

**Exercise Physiology, Biomechanics,
Nutrition, Motor Control, Neuroscience,
Coaching, Training, Psychology,
Physical Activity, Rehabilitation, Nutrition,
Medical and Health Sciences**

Area of Non-Science:

Sports Management, History, Culture, Psychology, Education, Performance, Perception, Community Research, Sport Law, Sport Financial Management, Sport Facilities Management, Sport Sociology,

1.2.2 Topic

Based on the definition above, the topic should clearly highlight the area of research and should consider incorporate the main objective of the study.

1.2.3. Research Objectives

Research objectives describes concisely what the research is trying to achieve and is typically aligned to the area of research. It can be tested based on the definitions above.

In science, the objectives are mostly to study the effectiveness of something which is usually an intervention, to study relationship between parameters, to compare parameter(s) among groups, or to predict one parameter based on existing parameters; and in some cases, they are going to describe phenomenon/parameters.

However, in non-science the objectives are to describe a phenomenon, investigate the current model, analyse factors, construct a model. In other words, objectives in science are more measurable and quantifiable than non-science.

For example in the area of Non-science, there are typically five major objectives (Ragin, 1994).

- (1) Manipulation of Things, Concepts and Symbols
- (2) Generalization
- (3) Verification of Old Facts
- (4) Extension of Knowledge
- (5) Knowledge May be Used for Theory Building or Practical Application.

Reference: Charles Ragin (1994): Constructing Social Research, Thousand Oaks: Pine Forge Press, 31-53.

And

- (1) Identifying general patterns and relationships

- (2) Testing and refining theories
- (3) Making predictions
- (4) Interpreting culturally or historically significant phenomena
- (5) Exploring diversity
- (6) Advancing new theories

In order to achieve these objectives few strategies (Methodology that is typically used) has been suggested:

The use of qualitative methods to study commonalities

- (1) The use of comparative methods to study diversity
- (2) The use of quantitative methods to study relationships among variables

Note: The area of non-science relies more on theories and in some cases the study itself is based on a specific theory, elaboration of theories and the link exists between theories and these are usually highlighted in the Literature Review.

1.2.3 Methodology

Appendix 1 is to assess Methodology and Design used in the study

Based on the criteria mentioned in the Appendix 1, methodology and study design of this proposal shows more weightage towards science than non-science.

The Checklist of Criteria for Science

Criteria/Score	2	4	6	8	10
Thesis Title:					
Research Area					
Research Objectives	1	2	3	4	5
1) The outcomes are predictable.					
2) The outcomes are reproductive.					
3) The outcomes are quantifiable.					
Methods	1	2	3	4	5
1) Methods are testable (true measures) and reliable (repeatable measures).					
2) The experiment is conducted in a highly controlled condition.					
3) Multiple validated methods are used.					
4) The methods are typically reproducible.					
5) Methods use cumulative scientific knowledge explicitly.					
Total Score					

Notes:

- Reviewers are appointed by the Deputy Director (Academic), CSES with the consultation of JKIT.

- Panel of reviewers should comprise of 3 members preferably from the research committee and/or JKIT or from other faculties if there are conflict of interest.
- The average score of ≥ 36 from a total score of 60 will be considered as Science

Likert scale

Criteria score

2 = Strongly disagree

4 = Disagree

6 = Neutral

8 = Agree

10 = Strongly agree

Research objectives & Methods

1 = Strongly disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly agree