

## **Unit 2 Research designs**

### **Task 1 Research designs**

A number of research designs are used within sport and exercise sciences. A research design is the overall structure of your research. Some of the common designs are the following:

- 1. Experimental**
- 2. Cross-sectional**
- 3. Case study**
- 4. Longitudinal**
- 5. Comparative**

#### **Match the types of research design with their description:**

- a) This research design is where you investigate a particular phenomenon (e.g. an individual or team) over a long period of time. It takes into account the development of the area of investigation over time and the environment in which the research resides.
- b) In this type of research, the researcher compares two or more things with the aim of discovering something about one or all of them.
- c) This research design involves using a range of participants with different backgrounds, ages and genders from the overall populations.
- d) The aim of this research design is to look at the effects of an independent variable on a dependent variable. To use this research effectively, you need to understand the terms independent and dependent variable. The independent variable affects the dependent variable.
- e) This type of research involves measuring the same variables over a long period of time and requires greater resources than other types of research. This type of investigation is useful if you want to examine the developmental characteristics of a group.

**Which of the designs would you use to examine the following phenomena?**

- a) if you wanted to examine factors associated with talent development in a particular sport
- b) if you wanted to investigate the psychological effects of injury at different stages of injury and recovery
- c) if you want to find out if a lower back flexibility training is benefiting athlete's high jump performance
- d) if you wanted to study preferences for team sports or individual sports in people in the UK
- e) if you wanted to find out if there were any similarities between boys' and girls' opinions on hooliganism in football

**Which verbs referring to 'doing research' did you notice in the text above?**

**Task 2 Types of research method**

<i>Research method</i>	<i>What the researcher does</i>	<i>Limitations of method</i>
<b>Experimental study</b>	manipulates a variable under highly controlled conditions to see if this produces any changes in a second variable	done in the highly controlled setting of the laboratory – these conditions are artificial and may not reflect what happens in the infinitely more complex real world
<b>Correlational study</b>		
<b>Field study (empirical observation)</b>		

<b>Survey</b>		
<b>Case study</b>		

**Task 3: Hypotheses**

Hypothesis is a scientific statement, in which there is only “some” certainty that this statement may be true. A statistical hypothesis is usually notated as H. One is a statement which infers EQUALITY or lack of relationships among variables (Ho – null hypothesis), while the other infers INEQUALITY (i.e. differences) between the variables.

E.g. Ho: Athletes and non-athletes have similar basic metabolic heart rate.

H1: .....

**Study and comment on the criteria for judging hypotheses:**

- A. Hypotheses should be stated clearly, in correct terminology and operationally.
- B. Hypotheses should be testable.
- C. Hypotheses should state relationships between variables.
- D. Hypotheses should be limited in scope.
- E. Hypotheses should not be inconsistent with most known facts.

(Burns, R.B. *Introduction to Research Methods*. Pearson Education, 2000.)

**Identify methodological mistakes in these hypotheses:**

1. Sport has a negative impact on health.
2. Does the number of sports facilities impact the level of fitness in a given area?
3. Joining a hockey club is too expensive.
4. Rhythm gymnastics is more beautiful than artistic gymnastics.

#### **Task 4 Integration of literature review and personal intentions**

Once the researcher has selected the appropriate information and scientific resources, the next stage in the research process is to summarise and integrate the information with personal intentions. Reading the literature will often result in new ideas and/or directions to be investigated.

**A literature review integrated with the researcher's personal intention may result in a theoretical foundation of a study, see the example below.**

Research has indicated that a relationship exists between psychological, physiologic, and health variables. This was documented in relations between personality types and coronary artery disease (18, 21), blood pressure and personality (15,16, 20), vascular reaction and personality traits (41) and anxiety and injury proneness (28).

The type A behaviour pattern has been established as an independent cluster of behaviours and attitudes (called an action-emotion complex) that relates to the risk of developing coronary heart disease (36). Type A individuals are said to be hard driving and competitive, feel pressured by time, aggressive, impatient, hostile (22).

Physiologic responses to similar physical stress may vary among individuals. A notable example is the systolic blood pressure (SBP) response to an exercise task. Several authors have shown that the BP response to exercise may be useful in prediction of future hypertension (6, 19, 43).

Weingarten et al. (42) examined the relationship between SBP response to exercise and anxiety in elite water polo players. They found a significantly higher resting SBP in the group scoring higher on anxiety, with a trend to higher SBP during exercise.

Competitive athletes have been shown to have a higher SBP response to exercise than non-trained individuals in the same age range. This was true for adolescents (4,7,) as well as for adults (5). Due to the various components of the type A personality, it could be assumed that competitive athletes have more tendencies towards A personality. This, however, was not measured in the above studies.

Whether this holds true for specific sports groups is unknown. There is some evidence that certain psychological characteristics are common to successful sportsmen participating in a specific sport (33,34). This gives rise to the question of whether a relationship exists between the psychological make-up and the SBP response to exercise.

While some data are available on the influence of psychological status (anxiety, extraversion, motivation) on performance (9), there are no studies examining the relationships between type A personality and objective physiologic parameters during exercise and more specifically SBP response to exercise.

This paper attempts to examine some of the relationships between type A personality traits and SBP response to an exercise task.

(adapted from Tenenbaum, G; Driscoll, M.P. (2005) *Methods of Research in Sport Sciences*. Meyer & Meyer Sport).