BTEC

HIGHER NATIONALS

Sport and Exercise Science

Higher National Certificate Lvl 4

Pearson

Unit 4: Professional Skills

Unit code	**M/616/1683**
Unit type	**Core**
Unit level	**4**
Credit value	**15**

Introduction

This unit is assessed by a Pearson-set assignment. The project brief will be set by the Centre, based on a theme provided by Pearson (this will change annually). The theme and chosen project within the theme will enable students to explore and examine a relevant and current topical aspect of sport.

Developing appropriate professional skills is fundamental to becoming a sport scientist and will open up an array of career opportunities within sport science. To be a sport scientist, individuals must develop a range of professional skills that will develop their understanding of research methods in the field of Sport and Exercise Science. Research methods are used within Sport and Exercise Science to develop human knowledge on a given topic. Without research, there would be very little validity and reliability to any of the applied work that is conducted within the field.

The aim of this unit is to develop students' knowledge and understanding of the skills and techniques necessary to carry out Sport and Exercise Science-related research. Research in Sport and Exercise Science has global significance and is essential in influencing the development of high-quality participation and performance and, fundamentally, promoting the health and wellbeing of individuals all over the world. Developing the skills and knowledge necessary to conduct research is, therefore, essential in order to promote sports participation and performance and develop healthier nations.

On completion of this unit, students will have developed an understanding of the professional skills necessary to conduct research in the field of Sport and Exercise Science. The knowledge and skills gained from this unit will develop students' academic skills and so it is well suited to individuals wanting to progress into further study within Sport and Exercise Science or develop a career as a sport scientist in one of the many disciplines that Sport and Exercise Science has to offer.

***Please refer to the accompanying Pearson-set Assignment Guide and the Theme Release document for further support and guidance on the delivery of the Pearson-set unit.**

Learning Outcomes

By the end of this unit students will be able to:

1. Discuss the skill requirements of a sport scientist
2. Explore the research process within Sport and Exercise Science
3. Examine quantitative research methods within Sport and Exercise Science
4. Review literature relevant to Sport and Exercise Science.

Essential content

LO1 **Discuss the skill requirements of a sport scientist**

Professional skills:

IT skills – literature searches, e.g. manual searching, search engines, journal

Databases, e.g. Sports Discuss, PubMed, Google Scholar; review of digital primary research, e.g. how to read research articles, how to summarise a research article, e.g. writing a journal patch, identifying the aims of the study, identifying the research methods used, identifying the key findings, identifying the strengths and limitations of the research

Data analysis – use of ICT-based analysis techniques, e.g. Excel, SPSS (Statistical Package for Social Sciences), e.g. inputting data, interpreting statistical results, identifying statistical significance, Validity and reliability of data.

Time management, e.g. organisational skills, prioritising workload, setting research objectives, reliable estimate of research time

Problem-solving, e.g. identification of research need/problem, problem analysis and clarification through current research, generating research ideas to identify the problem, identifying solutions following research, consideration of the implications of the research and how it will solve the problem, using research to develop interventions

Analytical skills, e.g. analysing information, checking for accuracy of information, collecting information, comparing information, critical thinking, data collection and analysis, making appropriate decisions, evaluating information, logical thinking, making a judgement, prioritising information

Skills assessment:

Methods of assessment, e.g. skills audit (personal profile using appropriate self-assessment tools, SWOT analysis (strengths, weaknesses, opportunities, threats)

LO2 **Explore the research process within Sport and Exercise Science**

Purpose of research:

Why research? Identifies, develops and improves gaps in sport and exercise participation and performance, promotes healthier nations, extends knowledge and understanding, improves own professional development, informs other relevant searches involved in sports participation and performance, i.e. Sports England, local authority sports development

Who conducts research in the sport science field – sport and exercise psychologists, sports nutritionists, biomechanic specialists, physiology specialists

Types of research undertaken – quantitative, qualitative.

The research process:

What is research? Definitions and characteristics

Research process – evolving nature of the research process, steps taken when carrying out research (selecting a topic, developing research aims, objectives, questions and hypotheses, conducting a literature review, selecting an appropriate methodology for data collection, selecting an appropriate sample for the study, collecting primary data, conducting data analysis, discussing results, e.g. reject or accept hypotheses, drawing conclusions, identifying research limitations following execution

Key issues, e.g. validity (internal, external, face, construct, ecological), reliability (test/re-test reliability, inter-observer reliability), objectivity, trustworthiness, accuracy, precision

Ethical and legal issues, e.g. British Association of Sport and Exercise Science (BASES) code of conduct, informed consent, confidentiality, data protection, competence levels

Ethics and ethical clearing and its role in the research process

LO3 **Examine quantitative research methods within Sport and Exercise Science**

Research designs:

Quantitative designs, e.g. experimental designs (to establish cause and effect), non-experimental designs, e.g. cross-sectional, longitudinal, correlational

Quantitative data collection – laboratory, field-based, questionnaires, observations, methods of recording data

Quantitative data analysis – organising and displaying data effectively, measures of central tendency (mode, median and mean), measures of variability (range, variance and standard deviation), selecting appropriate tests, e.g. type of data, number and type of variables, number of groups, parametric tests, e.g. t-tests, Pearson Product Moment Correlation Coefficient, non-parametric tests, e.g. Chi Square, Man-Whitney U, Spearman's Rank Order Correlation, Wilcoxen Signed-Rank test, interpreting levels of significance, one-tailed versus two-tailed, type I and type II errors

Research examples relevant to Sport and Exercise Science, e.g. sport and exercise psychology, exercise physiology, biomechanics, sports nutrition

LO4 **Review literature relevant to Sport and Exercise Science**

The literature review process:

Purpose of a literature review, e.g. identify gaps in research, justify the appropriateness of the research question, provide up-to-date information on research in the field of study, identify similar findings, inconsistencies in research, generate further research ideas

Conducting a literature review

Sources – internet, books, journals, reports, websites, databases, primary and secondary sources

Reading techniques to assess validity

Appropriateness of literature, e.g. scanning, skimming, identification of keywords

Methods used for searching, e.g. Sports Discuss, using key terms

Assessing the validity and reliability of sources:

Appearance, method used, timeliness, applicability

Presentation of literature review

Academic writing style

Use of referencing format(s)

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Discuss the skill requirements of a sport scientist</td><td rowspan="2">D1 Justify areas for improvement in your own professional skills</td></tr>
<tr><td>P1 Explain the skill requirements of a sport scientist
P2 Discuss the use of professional skills when working as a sport scientist</td><td>M1 Assess your own professional skills</td></tr>
<tr><td colspan="2">LO2 Explore the research process within Sport and Exercise Science</td><td rowspan="2">D2 Justify the importance of ensuring validity and reliability within the research process</td></tr>
<tr><td>P3 Explain the research process relevant to Sport and Exercise Science
P4 Discuss the purpose of research in the field of Sport and Exercise Science</td><td>M2 Analyse key issues in the research process within the field of Sport and Exercise Science</td></tr>
<tr><td colspan="2">LO3 Examine quantitative research methods within Sport and Exercise Science</td><td rowspan="2">D3 Justify appropriate quantitative research methods for a Sport and Exercise Science research example</td></tr>
<tr><td>P5 Explain quantitative research designs relevant to Sport and Exercise Science
P6 Conduct statistical analysis using an ICT-based analysis technique</td><td>M3 Assess the effectiveness of quantitative research design and data collection methods relevant to Sport and Exercise Science</td></tr>
<tr><td colspan="2">LO4 Review literature relevant to Sport and Exercise Science</td><td rowspan="2">D4 Evaluate the outcome of a literature review, making recommendations for future research</td></tr>
<tr><td>P7 Conduct a literature review on a Sport and Exercise Science-related topic
P8 Summarise current knowledge about a research topic following literature review</td><td>M4 Assess the outcome of a literature review, making reference to the validity and reliability of the research</td></tr>
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Recommended resources

Textbooks

ATKINSON, M. (New York) (2011) *Key Concepts in Sport and Exercise Research Methods*. Sage.

BELL. J. (UK) (2014) *Doing your Research Project: A Guide for First-Time Researchers. 6th edition*. Open University Press.

FIELD, A. (London) (2009) *Discovering Statistics Using SPSS. Third edition*. Sage.

JONES, I. (Oxon) (2014) *Research Methods for Sport Studies. Third edition*. Routledge.

NTOUMANI, N. (Oxon) (2001) *A Step-by-step Guide to SPSS for Sport and Exercise Studies*. Routledge.

THOMAS, G. (New York) (2013) *How to do your Research Project. 2nd edition*. Sage Publications Ltd.

Website

www.bases.org.uk	British Association of Sport and Exercise Sciences

Links

This unit links to the following related units:

Unit 8: Lifestyle Coaching

Unit 10: Technology in Sport

Unit 14: Research Project

Unit 24: Personal & Professional Development

Unit 25: Work Experience

Unit 36: Applied Lifestyle Coaching.