



**AMREF INTERNATIONAL UNIVERSITY**  
**SCHOOL OF MEDICAL SCIENCES**  
**DEPARTMENT OF REHABILITATION MEDICINE**  
**BACHELOR OF SCIENCE IN PHYSIOTHERAPY**

**END OF TRIMESTER EXAMINATIONS JANUARY TO APRIL 2026**

**UNIT CODE: PHT 316**

**UNIT NAME: Research methods**

**DATE: 16th APRIL 2026**

**TIME: 11.15am-1.15pm**

**INSTRUCTIONS**

- 1. All students will have two (2) hours to complete the examination**
- 2. This is an online exam, Attempt all questions as per the instruction**
- 3. It is the student's responsibility to report any page and number missing in this paper.**
- 4. Check that the paper is complete**
- 5. Total number of pages is 7 including the cover.**
- 6. Read through the paper quickly before you start.**

**SECTION A: ANSWER ALL ONE Marks each (30 marks)**

1. A physiotherapist wants to investigate whether early mobilization after knee surgery reduces hospital stay compared with conventional physiotherapy. What is the most appropriate research design?
  - A. Case study
  - B. Cross-sectional study
  - C. Randomized controlled trial
  - D. Descriptive survey
  
2. A researcher studies patients' experiences during long-term physiotherapy rehabilitation for stroke using in-depth interviews. Which research approach is most appropriate?
  - A. Quantitative research
  - B. Qualitative research
  - C. Experimental research
  - D. Secondary data analysis
  
3. A physiotherapy researcher selects every fifth patient attending the outpatient clinic to participate in a study. Which sampling technique is used?
  - A. Systematic sampling
  - B. Stratified sampling
  - C. Convenience sampling
  - D. Cluster sampling
  
4. study investigates whether exercise intensity influences improvement in muscle strength among athletes undergoing rehabilitation. Which variable is the independent variable?
  - A. Muscle strength improvement
  - B. Athlete age
  - C. Exercise intensity
  - D. Rehabilitation duration
  
5. During a study, researchers ensure that participants sign consent forms after receiving detailed explanations about the study. Which ethical principle is being applied?
  - A. Justice
  - B. Beneficence
  - C. Informed consent
  - D. Confidentiality
  
6. A physiotherapist measures pain levels using the Visual Analog Scale before and after treatment. Which type of data is being collected?
  - A. Nominal
  - B. Ratio
  - C. Interval
  - D. Ordinal

7. A researcher repeats the same measurement tool on two occasions and obtains similar results. What characteristic of the instrument is demonstrated?
  - A. Reliability
  - B. Validity
  - C. Accuracy
  - D. Generalizability
  
8. A study collects data once from patients with chronic low back pain to assess their current functional status. Which research design is used?
  - A. Longitudinal study
  - B. Cross-sectional study
  - C. Experimental study
  - D. Cohort study
  
9. A physiotherapy researcher wants to determine whether a new rehabilitation protocol is more effective than the standard protocol. Which study feature is most important to ensure validity?
  - A. Short study duration
  - B. Large sample size only
  - C. Random assignment
  - D. Single measurement
  
10. A research team conducts a pilot study before the main research. What is the main purpose of this pilot study?
  - A. Test feasibility of the study design
  - B. Increase sample size
  - C. Test validity of the study design
  - D. Replace the main study
  
11. A physiotherapy study investigates risk factors for workplace musculoskeletal injuries among hospital staff. Which research method would best identify these risk factors?
  - A. Descriptive study
  - B. Experimental study
  - C. Analytical study
  - D. Case report
  
12. Researchers collect data from existing hospital records on rehabilitation outcomes over the past five years. What type of data is this?
  - A. Primary data
  - B. Secondary data
  - C. Qualitative data
  - D. Observational data

13. A physiotherapy student conducts focus group discussions with patients with spinal cord injury to explore rehabilitation challenges. What type of data collection method is used?
- A. Quantitative
  - B. Observational
  - C. Experimental
  - D. Qualitative
14. A researcher divides the population into male and female groups before selecting random samples from each group. Which sampling technique is this?
- A. Cluster sampling
  - B. Stratified sampling
  - C. Convenience sampling
  - D. Purposive sampling
15. During a study, patient identities are replaced with identification numbers to protect privacy. Which ethical principle is applied?
- A. Autonomy
  - B. Confidentiality
  - C. Beneficence
  - D. Justice
16. A therapist designs a questionnaire to assess patient satisfaction with therapy services. Before using it widely, experts review the questions to ensure they cover all relevant aspects. What type of validity is being assessed?
- A. Content validity
  - B. Construct validity
  - C. Criterion validity
  - D. External validity
17. A physiotherapy researcher studies changes in muscle strength among stroke patients over six months. Which research design is most appropriate?
- A. Cross-sectional study
  - B. Longitudinal study
  - C. Case-control study
  - D. Descriptive study
18. A researcher is conducting a randomized controlled trial on a new rehabilitation technique. Participants are informed that they can withdraw from the study at any time without affecting their treatment. Which ethical principle is demonstrated?
- A. Justice
  - B. Autonomy
  - C. Beneficence
  - D. Non-maleficence

19. During a clinical trial, researchers notice that the intervention group experiences unexpected adverse effects. What should be the most appropriate action?
- A. Ignore the results until study completion
  - B. Continue the study to maintain sample size
  - C. Report the adverse effects and reassess the study protocol
  - D. Remove the affected participants from analysis
20. A physiotherapist integrates clinical expertise, patient preferences, and research evidence when selecting treatment methods. This process best describes:
- A. Experimental practice
  - B. Clinical observation
  - C. Descriptive research
  - D. Evidence-based practice
21. During proposal development, the researcher identifies a gap in existing literature on workplace musculoskeletal injuries among physiotherapists. Which section of the proposal mainly addresses this issue?
- A. Methodology
  - B. Literature review
  - C. Data analysis
  - D. Results
22. A physiotherapist measures types of disability categories (mild, moderate, severe) in patients with spinal cord injuries. Which measurement scale is used?
- A. Nominal
  - B. Interval
  - C. Ordinal
  - D. Ratio
23. A rehabilitation researcher measures range of motion in degrees using a goniometer. Which measurement scale is most appropriate?
- A. Nominal
  - B. Ordinal
  - C. Interval
  - D. Ratio
24. A physiotherapy researcher compares mean recovery time between two treatment groups using a statistical test. Which stage of the research process is being performed?
- A. Data collection
  - B. Data analysis
  - C. Sampling
  - D. Hypothesis formulation

25. In analyzing rehabilitation data, a researcher finds no statistically significant difference between treatment groups. What is the most appropriate interpretation?
- A. The treatment is ineffective
  - B. The null hypothesis is accepted
  - C. The null hypothesis is not rejected
  - D. The study should be discarded
26. A physiotherapist selects participants who are easily accessible from their clinic rather than randomly selecting them. Which type of bias is most likely introduced?
- A. Measurement bias
  - B. Selection bias
  - C. Recall bias
  - D. Observer bias
27. Which type of variable is manipulated by the researcher?
- A. Dependent variable
  - B. Independent variable
  - C. Confounding variable
  - D. Extraneous variable
28. During outcome assessment, the physiotherapist expects the new therapy to work and unintentionally records better outcomes for those patients. Which bias may occur?
- A. Observer bias
  - B. Sampling bias
  - C. Publication bias
  - D. Recall bias
29. A researcher uses the Functional Independence Measure to assess rehabilitation progress in patients with spinal cord injuries. What is the primary purpose of this tool?
- A. Diagnose disease
  - B. Measure functional ability and independence
  - C. Determine treatment cost
  - D. Measure functional ability and mobility
30. An occupational therapy researcher studying rehabilitation outcomes only includes patients who completed therapy sessions. Which bias may occur?
- A. Attrition bias
  - B. Selection bias
  - C. Measurement bias
  - D. Recall bias

**SECTION B: SHORT ANSWER QUESTIONS Answer all. 5 marks each**

31. Explain the importance of research in physiotherapy practice.
32. Differentiate between quantitative and qualitative research.
33. Define a research problem and explain its characteristics.
34. Explain the difference between the concept of reliability and validity in research research instruments.

**SECTION C: LONG ANSWER QUESTIONS Answer *one* (20 marks)**

35. Compare experimental and non-experimental research designs and discuss their applications in physiotherapy research.
36. Discuss sampling techniques in research, highlighting probability and non-probability sampling methods.

AMMU