



**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 324**

**UNIT NAME: Evidence based practice (main exam)**

**DATE: 17<sup>th</sup> April 2026**

**TIME: 2HOURS**

**START: 2:00PM**

**FINISH: 4:00PM**

**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 9 including the cover.**
- 6. Read through the paper quickly before you start.**

**Section A. MSQ questions. Attempt all the questions (30 Marks)**

1. Why is it important for the physiotherapy profession to embrace EBP?
  - A. To ensure that student learning never becomes outdated.
  - B. To upgrade practice methods and remain relevant in the era of scientific research.
  - C. To allow intuition to lead treatment decisions.
  - D. To reduce the need for patient values in decision-making.
  
2. A key difference between a Systematic Review and a Scoping Review is that:
  - A. Scoping reviews are more rigorous.
  - B. Scoping reviews do not typically involve methodologic appraisal.
  - C. Systematic reviews are always primary research.
  - D. Scoping reviews only use animal studies.
  
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5. In the PEDro scale, "Intention to Treat" analysis means:
  - A. Only participants who finished the entire treatment were analyzed.
  - B. All participants were analyzed in the groups to which they were originally assigned.
  - C. The therapists were blinded to the treatment goals.
  - D. The study used a retrospective design

6. Why is a Narrative Review considered lower quality for making clinical decisions compared to a Systematic Review?
- A. It does not provide any information about the study design.
  - B. It is a "study of studies" and therefore secondary.
  - C. It is subject to bias because the expert selects articles that may support their personal opinion.
  - D. It requires recruiting new participants which introduces more error.
7. When interpreting a Forest Plot, what does the "center line" typically represent?
- A. The pooled effect size of all studies.
  - B. The Line of No Effect (null value).
  - C. The 95% confidence interval.
  - D. The largest study in the review
8. A clinician wants to determine the prevalence of lower back pain in high school athletes in the year 2023. The most appropriate study design to find this information is:
- A. Randomized Clinical Trial.
  - B. Cross-sectional Study.
  - C. Case-Control Study.
  - D. Longitudinal Prospective Study.
9. A therapist is treating a patient with a rare condition. No RCTs or cohort studies exist for this condition. The therapist finds a published report detailing the treatment and recovery of a single similar patient. This evidence is classified as:
- A. Level 1: Systematic Review.
  - B. Level 3: Case-Control Study.
  - C. Level 4: Case Report.
  - D. Level 5: Expert Opinion.
10. Which type of study is considered "Secondary Research"?
- A. Cohort Study.
  - B. Randomized Clinical Trial.
  - C. Systematic Review.
  - D. Case-Control Study

11. The "sample size" of a Systematic Review specifically refers to:
- A. The total number of patients across all studies that were screened.
  - B. The number of researchers who performed the data extraction.
  - C. The number of primary studies that met the specific inclusion and exclusion criteria.
  - D. The number of databases (e.g., PubMed, PEDro) that were searched.
12. Which of the following is a "documented, systematic approach that minimizes bias" in a Systematic Review?
- A. Allowing the expert author to choose the most relevant articles for the review.
  - B. Determining inclusion and exclusion criteria *prior* to the start date of the search.
  - C. Recruiting at least 20 new participants to verify the findings of the included studies.
  - D. Only searching one database to ensure the results are consistent.
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16. A researcher wants to know the percentage of physical therapists currently experiencing burnout in 2024. They send a survey out on a single day in June. This design is.
- A. Longitudinal cohort study
  - B. Cross-sectional study.
  - C. Prospective study.
  - D. A Case Series study
17. A researcher wants to know the percentage of physical therapists currently experiencing burnout in 2024. They send a survey out on a single day in June. This design is:
- A. Longitudinal because it tracks a professional group.
  - B. Cross-sectional because it captures data at a single point in time.
  - C. Prospective because it looks at a current problem.
  - D. A Case Series because it involves multiple therapists.
18. You are appraising an RCT using the PEDro scale. You find that the person measuring the knee range of motion knew which group the patient was in. Which PEDro criterion was failed?
- A. Blinding of all subjects.
  - B. Blinding of all therapists.
  - C. Blinding of all assessors.
  - D. Allocation concealment.
19. A paper is titled "A Review of modern PNF Techniques." It has no "Methods" section and no "Inclusion Criteria." This is most likely a:
- A. Systematic Review.
  - B. Narrative Review.
  - C. Meta-analysis.
  - D. Scoping Review.

20. A Forest Plot for a Meta-analysis shows 10 small squares and one very large square. What does the size of the large square represent?
- A. That study had a more significant result than the others.
  - B. That study had a larger weight usually due to a larger sample size.
  - C. That study was the only one that used blinding.
  - D. That study was a Systematic Review itself.
21. Which step of EBP involves "identifying if the study patients are similar to your population of interest"?
- A. Step 1: Ask.
  - B. Step 3: Appraise (specifically Applicability).
  - C. Step 5: Audit.
  - D. Step 2: Access.
22. A therapist applies Grade IV spinal mobilizations to one group and Grade I mobilizations to another to observe changes in the Pressure Pain Threshold (PPT) at the lumbar spine. Which is the Independent Variable?
- A. Pressure Pain Threshold
  - B. Grade of mobilization
  - C. Location of the pain
  - D. None of the above
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  - C. Location of the pain
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24. A paediatric PT studies whether prone "tummy time" duration (in minutes per day) predicts the age of onset for independent crawling. What is the Independent Variable?
- A. Age of crawling onset
  - B. Duration of tummy time
  - C. Motor development scale
  - D. None of the above
25. A physiotherapist is researching whether robotic-assisted gait training is more effective than traditional over ground gait training for improving walking speed in adults within 6 months of a stroke. Which element represents the "I" (Intervention) in the PICO framework?
- A. Adults within 6 months of a stroke
  - B. Robotic-assisted gait training
  - C. Traditional over ground gait training
  - D. Walking speed

26. A study investigates if inspiratory muscle training (IMT) added to standard pulmonary rehabilitation improves exercise tolerance (6-minute walk test) more than standard pulmonary rehabilitation alone in patients with severe COPD. Which element represents the "C" (Comparison)?
- A. Inspiratory muscle training (IMT)
  - B. Severe COPD patients
  - C. 6-minute walk test distance
  - D. Standard pulmonary rehabilitation alone.
27. What is the purpose(s) of a Clinical Practice Guideline (CPG)?
- A. Integrate research evidence with knowledge from clinical experts
  - B. Make the best available research evidence directly applicable to clinical practice
  - C. Consider research evidence with consideration for patient perspectives
  - D. All the above are purpose
28. Why are patients blinded in a randomized clinical trial?
- A. Minimize dropouts from the study
  - B. Minimize bias in the sample size calculation
  - C. Minimize the influence of clinicians treating patients
  - D. Minimize bias in the group formation.
29. Which of the following Boolean operators would be the MOST effective to find an answer to a clinical question on search engines about the effectiveness of PNF exercises in management of stroke?
- A. Or
  - B. And
  - C. Not
  - D. Plus
30. Read the following Abstract from a study and answer the questions below.
- "To compare the effects of motor control exercise (MCE) and general aerobic exercise (AE) on pain and disability, 120 participants aged 18–65 with non-specific CLBP for >3 months were recruited from a university hospital. After baseline testing, participants were randomly assigned to either the MCE group (n=60) or the AE group (n=60) using a computer-generated random sequence. Allocation was concealed in opaque, numbered envelopes kept by an off-site researcher. The assessors measuring the primary outcomes (Oswestry Disability Index and Pain VAS) were blinded to group assignments; however, due to the nature of the exercise, it was not possible to blind the patients or the therapists providing the treatment. At the 6-month follow-up, 56 participants in the MCE group and 54 in the AE group completed the final assessment. An intention-to-treat analysis was performed, including all 120 originally randomized participants to account for those who

dropped out. Does the abstract state that the groups were similar at the start regarding the most important prognostic indicators?

- A. Yes, it says they were identical.
- B. No, the AE group was older.
- C. It is not mentioned in this abstract.
- D. No, because it was a randomized trial.

**Section B: Short structured questions. Answer all the questions.**

31. Read the following abstract from a systematic review and answer the following short structured questions.

Title: *Manual Therapy vs. Exercise for Hip Osteoarthritis: A Systematic Review and Meta-Analysis.*

Abstract: "We searched MEDLINE, CINAHL, and PEDro from inception to 2025 for randomized controlled trials (RCTs) comparing manual therapy (MT) to exercise-only protocols for hip osteoarthritis. Two independent reviewers screened 450 records and identified 12 eligible studies. Data extraction and risk of bias assessment (using the Cochrane tool) were performed independently by two authors, with a third author resolving any disagreements. A meta-analysis was conducted using a random-effects model. We assessed heterogeneity using the  $I^2$  statistic and found it at 85%. Results showed that MT provided a statistically significant improvement in pain ( $p = 0.03$ ) but not in physical function ( $p = 0.15$ ) compared to exercise alone. A funnel plot was used to assess for publication bias. The quality of evidence was rated using the GRADE approach."

31. In the context of a systematic review for hip osteoarthritis, three common electronic databases were utilized by physiotherapist to search to find high-quality Randomized Controlled Trials (RCTs). Explain why using only one database is considered a limitation (3 Marks).
32. Explain the procedural importance of having two independent reviewers for the "Screening" and "Data Extraction" phases of a systematic review. How are conflicts between these two reviewers typically resolved? (6 Marks)
33. If a meta-analysis on Manual Therapy shows an  $I^2$  of 85%, what does this suggests about the clinical application of the results (3 Marks)
34. If the diamond on a Forest Plot comparing "Exercise" vs. "No Exercise" for knee pain is located entirely to the left of the zero line (favoring exercise), what does this tell the clinician? (4 Marks)

35. You are treating elderly patients (aged 70+) who have undergone Total Knee Arthroplasty (TKA). You want to determine if aquatic-based exercise (pool therapy) results in better knee range of motion (ROM) recovery at 6 weeks post-op compared to the standard land-based home exercise program (4 Marks)

P. \_\_\_\_\_

I. \_\_\_\_\_

C. \_\_\_\_\_

O. \_\_\_\_\_

**Section C. Long structured questions. 20 Marks (Answer any of the two questions)**

36. A senior physiotherapist in a sports clinic observes that many patients with chronic Achilles tendinopathy are slow to recover. She wants to conduct a study to see if Extracorporeal Shockwave Therapy (ESWT) combined with eccentric loading exercises is more effective than eccentric loading exercises alone for reducing pain (measured by the VISA-A scale) at a 12-week follow-up.

- a) Identify the independent variable and the dependent variable in this study. (2 Marks).
- b) Define the PICO components for this research scenario. (4 Marks)
- c) Synthesize the PICO components from Part A into a single, formal research question suitable for a clinical trial. (4 Marks)

37. The following are features of a clinical trial.

- a) Explain what is stratification randomization and why it is important in an RCT (2 marks)
- b) Discuss allocation concealment in a Randomized clinical trial (4 marks)
- c) Discuss types of blinding in a RCT (4 marks)

38. a) Discuss the pillars of Evidence based practice (6 marks)

- b) Discuss the factors that influence the hierarchies of evidence in Evidence based practice (4 marks)