



AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF REHABILITATIVE MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY
END OF TRIMESTER EXAMINATIONS MAY TO AUGUST 2023

UNIT CODE: PHT 324
UNIT NAME: EVIDENCE BASED PRACTICE

DATE: 2ND AUGUST 2023

TIME: 6-8PM

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 11 including the cover.
6. Read through the paper quickly before you start.
7. Upon finishing the exam paper, on submission, the message 'Your examination has been submitted' will appear.

All the Best!!

TOTAL: _____/50

PERCENT: _____/100%

POINTS EARNED TOWARDS FINAL GRADE _____/70

1. Evidence-based practice includes all of the following, EXCEPT?
 - a. Patient values
 - b. Clinical circumstances
 - c. General internet searching
 - d. Clinical expertise

2. The first step of the evidence-based practice process is?
 - a. Acquiring an article through searching databases
 - b. Appraising an article
 - c. Applying an article's conclusions to practice
 - d. Asking a clinical question

3. For the narrative clinical question: "in a patient with type 2 diabetes who has adhesive capsulitis, is a corticosteroid injection less effective than physical therapy for increasing glenohumeral range of motion", glenohumeral range of motion refers to the?
 - a. Population
 - b. Intervention
 - c. Comparison
 - d. Outcome

4. Which of the following search strategies would be the most efficient to find an answer to a clinical question in PubMed about the effectiveness of exercise for someone with *shoulder pain*?
 - a. Shoulder OR exercise
 - b. Shoulder NOT exercise
 - c. Shoulder AND exercise
 - d. "Shoulder exercise"

5. A study investigated the effect of resistance exercise compared to flexibility exercise to improve activity for persons with knee pain. Participants were assigned randomly, by a masked research assistant, to one of the two exercise intervention groups. The participants were recruited from a group of volunteers and provided informed consent to participate in the study. The six-minute walk test measured activity at baseline and after the study. In this study, the dependent variable is:
 - a. Activity as measured by six-minute walk test
 - b. The informed consent form
 - c. The number of months since the participants were diagnosed with knee pain
 - d. The type of exercise (resistance or flexibility)

6. A study investigated the effect of resistance exercise compared to flexibility exercise to improve activity for persons with knee pain. Participants are assigned randomly, by a masked research assistant, to one of the two exercise intervention groups. The participants are recruited from a group of volunteers and provide informed consent to participate in the study. Activity is measured at baseline and after the study by the six-minute walk test. In this study, the independent variable is:
 - a. Activity as measured by six-minute walk test
 - b. The informed consent form
 - c. The number of months since the participants were diagnosed with knee pain
 - d. The type of exercise (resistance or flexibility)

7. In the research question, for hospitalized patients with grade 2 or 3 pressure ulcers, is an insulin dressing or normal saline dressing more effective in reducing the size of the pressure ulcer, the hospitalized patients with pressure ulcers represent the?

- a. Population
- b. Intervention
- c. Comparison
- d. Outcome

8. A well-done systematic review of prognostic evidence is considered what level of evidence?

- a. Level 1
- b. Level 2
- c. Level 3
- d. Level 4

9. Some PEDro Scale criteria are dedicated to identifying if the people involved in the study are “blind.” Who can be “blind” in a typical randomized controlled trial?

- a. Subject and therapist
- b. Therapist and assessor
- c. Subject, therapist, or assessor
- d. Assessor and subject

10. A study was conducted on adolescents with idiopathic scoliosis. The authors wanted to investigate if combined aerobic and resistance training would improve respiratory function more than only aerobic training. Forty adolescents with idiopathic scoliosis and formal indication for surgical correction (spinal curvature ≥ 45 deg) were included in the study. Both groups undertook three 60-minute training sessions per week for 12 weeks. At baseline and upon completion of treatment, participants completed: a 6-minute walk test with Borg scale (0 to 10) and peak expiratory flow measurement. What is the research design, and respectively level of evidence, of this study?

- a. Prospective cohort study, level 2
- b. Randomized control trial, level 1
- c. Case-controlled study, level 3
- d. Retrospective cohort study, level 3

11. For the narrative clinical question: “in patients with patellar tendinopathy, is dry needling more effective than standard physical therapy for decreasing knee pain”, *standard physical therapy* refers to the?

- a. Population
- b. Intervention
- c. Comparison
- d. Outcome

12. For the narrative clinical question: “in a group of mild-moderate asthmatic children with exercise symptoms, is combined exercise training (resistance and aerobic) program more effective than following routine clinical orientations for aerobic fitness”, *aerobic fitness* refers to the?

- a. Population
- b. Intervention
- c. Comparison

d. Outcome

13. For the narrative clinical question: “in chronic stroke patients, is dry-land therapy more effective than for balance”, *chronic stroke patients* refer to be?

- a. Population
- b. Intervention
- c. Comparison
- d. Outcome

14. Which of the following search strategies would be the most efficient to find an answer to a clinical question in PubMed about the effectiveness of exercise for *patellar tendinopathy*?

- a. Exercise OR Patellar tendinopathy
- b. Exercise NOT Patellar tendinopathy
- c. Exercise AND Patellar tendinopathy
- d. “patellar tendinopathy”

15. Which of the following search strategies would be the most efficient to find an answer to a clinical question in PubMed about the effectiveness of manual therapy in adolescents with *idiopathic scoliosis*?

- a. Manual therapy AND Idiopathic scoliosis AND Adolescents
- b. Manual therapy AND Idiopathic scoliosis
- c. Manual therapy OR Idiopathic scoliosis
- d. Manual therapy AND Adolescents

16. What are the three main categories of questions used to appraise a study?

- a. study design?; meaningful results?; significant outcomes?
- b. study valid?; meaningful results?; relevant to my patient?
- c. study valid?; significant outcomes?; conclusions based on findings?
- d. valid method?; data analyzed properly?; relevant to my patient?

17. Which statement is NOT true of the appraisal process?

- a. Appraisal requires a thoughtful search strategy to locate relevant studies.
- b. Appraisal is primarily concerned with validity of design, analysis, and findings.
- c. Appraisal can include attention to the logical presentation of a theoretical background to justify a study.
- d. Reading a study’s abstract provides sufficient information to determine the quality of a study.

18. Which of the following is important to find when appraising the ‘*Methods*’ section of an article?

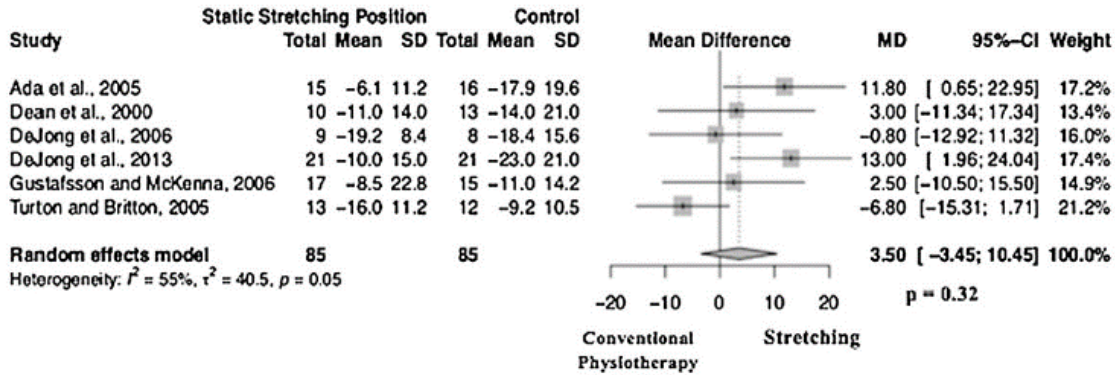
- a. A clear description of the participants’ characteristics.
- b. The researcher discusses the importance of *p* values for all analyses.
- c. A clear statement of the research question.
- d. A literature review supporting the rationale for the research question.

19. Which of the following is NOT important to find when appraising the ‘*Introduction*’ section of an article?

- a. A clear statement of the research question.
- b. A clear description of the participants’ characteristics.
- c. The research hypothesis.
- d. A literature review supporting the rationale for the research question.

Please use this figure for questions 20, 21, and 22.

Mobility of shoulder external rotation



20. Analyzing the results of a meta-analysis, which study of the forest plot below has the largest population?

- DeJong et al. 2006.
- Ada et al. 2005.
- DeJong et al. 2013.
- Turton and Britton 2005.

21. Which study shows the best efficacy for stretching when compared with conventional exercise ("control")?

- DeJong et al. 2013.
- Ada et al. 2005.
- Turton and Britton 2005.
- Dean et al. 2000.

22. Which study shows that conventional therapy ("Control") is more efficient than stretching?

- Gustafsson and McKenna 2006
- Ada et al. 2005.
- Dean et al. 2000.
- Turton and Britton 2005.

23. Why patients should be blinded in a randomized trial to?

- Minimize bias in group formation.
- Minimize dropouts from the study.
- Blind the clinicians treating the patients.
- Minimize bias in sample size calculation.

24. Which of the following is NOT an important issue to consider when appraising the validity of a Clinical Practice Guideline (CPG)?

- The diversity of stakeholders involved in developing the guideline.
- The number of studies available.
- Independence of the authors from the organization funding development of the guideline.

d. That the method of searching, data extraction, and quality assessment is similar to that expected for a systematic review.

AMMU

Please use this figure for questions 25, 26, 27, and 28.

Study	PEDro scale item number											Total score /10
	1 ^a	2	3	4	5	6	7	8	9	10	11	
Bang and Deyle 2000	■	■	□	■	□	□	■	■	□	■	■	6
Bergman et al. 2004	■	■	■	■	□	□	■	■	■	■	■	8
Binder et al. 1984	□	■	□	□	□	□	□	■	□	■	□	3
Bulgen et al. 1984	□	■	□	□	□	□	□	■	□	■	□	3
Citaker et al. 2005	□	■	□	■	□	□	□	□	■	■	■	4
Conroy and Hayes 1998	■	■	□	■	■	□	■	■	□	■	■	7
Guler-Uysal and Kozanoglu 2004	■	■	□	■	□	□	■	■	□	■	■	6
Maricar and Chok 1999	■	□	□	□	□	□	□	□	■	■	■	4
Nicholason 1985	■	■	□	□	□	□	■	■	□	■	■	6
Teys et al. 2008	■	■	■	■	□	□	■	■	□	■	■	8
van den Dolder and Roberts 2003	■	■	■	□	□	□	□	■	■	■	■	7
Vermeulen et al. 2006	■	■	□	■	□	□	■	■	■	■	■	7
Winters et al. 1997	■	■	□	□	□	□	■	□	■	■	■	5
Winters et al. 1999	□	■	□	□	□	□	□	□	□	■	■	3

Fig. 2. Pedro score table. ^aCriteria 1 was not used to calculate the PEDro score. □ = criteria not met. ■ = criteria met. Pedro Scale item. 1. Eligibility criteria were specified. 2. Subjects were randomly allocated to groups. 3. Allocation was concealed. 4. The groups were similar at baseline regarding the most important prognostic indicators. 5. There was blinding of all subjects. 6. There was blinding of all therapists who administered the therapy. 7. There was blinding of all assessors who measured at least one key outcome. 8. Measures of at least one key outcome were obtained from more than 85% of the subjects initially allocated to groups. 9. All subjects for whom outcome measures were available received the treatment or control condition as allocated or, where this was not the case, data for at least one key outcome was analyzed by "intention to treat". 10. The results of between-group statistical comparisons are reported for at least one key outcome. 11. The study provides both point measures and measures of variability for at least one key outcome.

25. Among the 14 studies included in the systematic review, which of the following had the poorest design quality?

- a. Teys et al. (2008)
- b. Conroy and Hayes (1998)
- c. Bergmann et al (2004)
- d. Winters et al (1999)

26. Among the 14 studies included in the systematic review, how many failed to blind study assessors?

- a. 6
- b. 8
- c. 14
- d. 0

27. Among the 14 studies included in the systematic review, how many reported central tendency (e.g., mean) and dispersion, or variability (e.g., standard deviation) for at least one dependent variable?

- a. 11
- b. 12
- c. 6
- d. 2

28. Among the 14 studies included in the systematic review, how many informed the inclusion/exclusion criteria?

- a. 2
- b. 14
- c. 6
- d. 10

Please use this figure for questions 29, 30, 31, and 32.

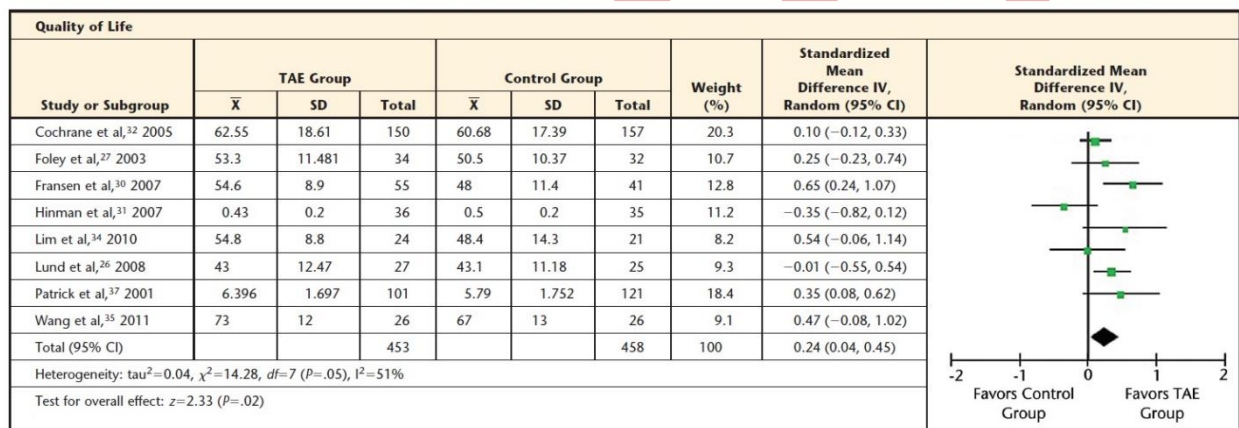


Figure 4. Forest plots showing the effect of therapeutic aquatic exercise (TAE) on quality of life. 95% CI=95% confidence interval.

29. Figure 4 compares effect of therapeutic aquatic exercise (TAE) on quality of life of individuals with lower limb osteoarthritis. What is the conclusion of the forest plot?

- a. Therapeutic aquatic exercise does NOT have significant effect on quality of life.
- b. Therapeutic aquatic exercise had a small and NOT significant effect on quality of life.
- c. Therapeutic aquatic exercise does NOT have significant effect
- d. Therapeutic aquatic exercise had a small but significant effect on quality of life.

30. How many studies found statistically significant result that favored therapeutic aquatic exercise (TAE) on quality of life in patients with lower limb osteoarthritis?

- a. One
- b. Six
- c. Seven
- d. Two

31. Among the studies depicted in Figure 4, which had the largest sample size?

- a. Wang et al, 2011
- b. Cochrane et al, 2005
- c. Lim et al, 2010
- d. Patrick et al, 2001

32. For a patient with lower limb osteoarthritis, which study would be most worth reading to learn about a therapeutic aquatic exercise (TAE) program that was more effective for quality of life?

- a. Fransen et al, 2007
- b. Hinman et al, 2007
- c. Lim et al, 2010
- d. Patrick et al, 2001

33. The selection of specific search terms is used to search databases in a systematic review during what phase?

- a. Formulating review question.
- b. Searching and selecting studies.
- c. Study quality assessment.
- d. Extracting data from studies.

34. What is(are) a purpose(s) of a Clinical Practice Guideline?

- 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 are purposes of CPG.

35. Which kinds of studies are the best resource for assisting in the care of a patient with immediate PT needed?

- a. Diagnostic.
- b. Prognosis.
- c. Qualitative.
- d. Intervention.

36. Identify resources commonly used to assess the quality of study intervention?

- a. PEDro scale and Cochrane Risk of Bias Tool.
- b. Pubmed and Embase.
- c. PEDro scale and Pubmed.
- d. Cochrane Risk of Bias Tool and Embase.

37. Identify differences between Clinical Practice Guidelines (CPG) and Systematic Review (SR).

- a. SR includes clinical expert opinion, CPG does not include.
- b. SR includes patient perspective, CPG does not include.
- c. SR and CPG include clinical expert opinion.
- d. SR does not include clinical expert opinion, CPG includes.

38. This is NOT a characteristic of a Scoping Review.

- a. Maps the body of available literature on a broad topic.

- b. Has a method and systematic search.
- c. Uses more expansive selection criteria for study designs.
- d. Involves appraisal of articles included.

39. Which of the following is NOT a pillar of EBP PT practice?

- a. Clinical Research
- b. Basic Research
- c. Patient Values
- d. Provider experience

40. Evidence-based practice is needed in healthcare because?

- a. It is always a less expensive treatment for every patient
- b. It can decrease the overutilization of treatments that are not supported by the research
- c. It is taught by experts
- d. It will result in every patient receiving the same treatment

41. In the process of critical appraisal, levels of evidence can:

- a. Suggest which types of studies should provide the strongest forms of evidence.
- b. Tell us which studies should be used for clinical decision-making.
- c. Be used to indicate which studies have good outcomes.
- d. Only be used to categorize qualitative studies.

42. Which of the following is NOT an important appraisal concern for the 'Discussion' section of an article?

- a. The researcher discusses the importance of p values for all analyses.
- b. The researcher's interpretation of the data follows logically from the findings.
- c. The author offers alternative explanations for findings.
- d. The literature is used to support or explain findings.

43. Which of the following is important to find when appraising the 'Results' section of an article?

- a. The researcher discusses the importance of p values for all analyses.
- b. Results provide a point estimate and a measure of significance.
- c. Statistical results are provided in tables.
- d. The author offers alternative explanations for findings.

44. The PEDro scale includes items related to all of the following items; EXCEPT:

- a. Information about random allocation of subjects.
- b. Information about outcomes used on the study.
- c. Information about blinding.
- d. Information about loss to follow up.

45. Why patients should be blinded in a randomized trial to?

- a. Minimize bias in group formation.
- b. Minimize dropouts from the study.
- c. Blind the clinicians treating the patients.
- d. Minimize bias in sample size calculation.

46. Which of the following is NOT a pillar of EBP PT practice?

- a. Clinical Research
- b. Basic Research
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47. Evidence-based practice is needed in healthcare because?

- a. It is always a less expensive treatment for every patient
- b. It can decrease the overutilization of treatments that are not supported by the research
- c. It is taught by experts
- d. It will result in every patient receiving the same treatment

48. A study was performed to establish arm-injury incidence in male youth (9-12 years old) baseball players. The baseball players were physically assessed and then were prospectively followed for 10 months. The presence of arm injury was prospectively tracked. All injuries were physically confirmed by a licensed physical therapist. What is the research design, and respectively level of evidence, of this study?

- a. Cohort study, level 2
- b. Randomized control trial, level 1
- c. Case-controlled study, level 3
- d. Case series, level 3

49. A study was conducted to compare trunk and spine kinematics during running between individuals with spinal fusion surgery for adolescent idiopathic scoliosis and healthy controls. Ten individuals with spinal fusion surgery and ten healthy controls were pair-matched for sex, age, and level of physical activity. All participants ran on a treadmill at a self-selected speed. 3D motion capture system was used to generate trunk and pelvis segmental angles and lower extremity joint angles of the study participants. What is the research design, and respectively level of evidence, of this study?

- a. Cohort study, level 2
- b. Randomized control trial, level 1
- c. Case-controlled study, level 3
- d. Non-randomized controlled study, level 2

50. The process of Evidence-Based Practices follows some steps. Which is the next step after the relevant literature is identified?

- a. To elaborate a clinical question
- b. To appraise the research evidence available
- c. To apply the evidence
- d. To evaluate the effectiveness and efficacy of the interventions used