

ChatGPT vs. Google Gemini: Evaluating the Potential of Large Language Models for Vestibular Rehabilitation Education

Yael Arbel P.T., M.H.A.¹, Yoav Gimmon P.T., Ph.D.^{2,3}, Liora Shmueli, Ph.D.¹



Introduction

Vestibular Rehabilitation



- Specialized form of therapy
- Vestibular system - the inner ear and the brain
- Symptoms - dizziness, vertigo, and imbalance
- Treatment - exercises and strategies

Purpose of study



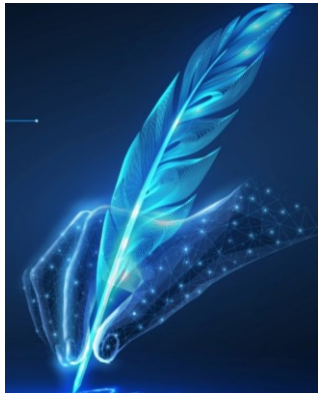
To assess the level of accuracy and rate the explanations given by AI large language models in response to a multiple-choice questionnaire as a tool for acquiring knowledge in the field of vestibular rehabilitation.

Methods

Validity VKT
questionnaire



ChatGPT and
Google Gemini
prompted VKT



Professional Physiotherapy 50
Balance & Falls Prevention
UTAUT and digital learning
AI Image Assistance
Vestibular Rehabilitation FAQ
April
Assist with user request
Israel Data Center Guide

YA What must be included in adaptation training of the vestibular system?
A. Practice with closed eyes
B. Head movements during gaze fixation
C. Static standing on a narrow base
D. Positional therapy

In adaptation training of the vestibular system, the following element should be included:
B. Head movements during gaze fixation.

Adaptation training aims to improve the coordination between visual input and vestibular signals, allowing the brain to adjust and compensate for vestibular dysfunction. One effective method of training adaptation is by incorporating head movements while maintaining gaze fixation.

By performing controlled and deliberate head movements, such as turning the head from side to side or up and down, while maintaining visual fixation on a target, the patient's vestibular system is challenged to adapt and recalibrate its response. This helps to improve the coordination between visual and vestibular inputs, reducing symptoms of dizziness, gaze instability, and imbalance.

Option A (Practice with closed eyes) may be used in certain rehabilitation protocols, but it is not specifically related to adaptation training. It is more commonly associated with sensory reweighting exercises or sensory substitution approaches.

Option C (Static standing on a narrow base) is more related to balance training and improving postural stability rather than adaptation training specifically.

Option D (Positional therapy) is a treatment approach primarily used for conditions like benign paroxysmal positional vertigo (BPPV) to reposition displaced canoliths. While it may be part of a comprehensive vestibular rehabilitation program, it is not specific to adaptation training.

Therefore, the most relevant element to include in adaptation training of the vestibular system is B. Head movements during gaze fixation.

Upgrade to Plus NCM
yasiv@gmail.com

Regen

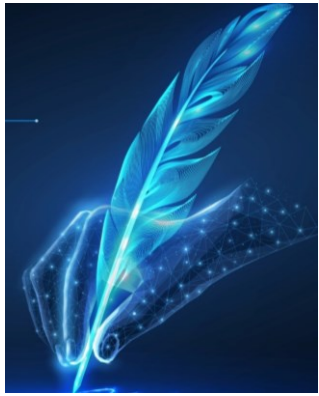
12/18

Methods

Validity VKT
questionnaire



ChatGPT and
Google Gemini
prompted VKT



Grading
ChatGPT
response



1 - comprehensive



2 - correct but inadequate



3 - some correct and some incorrect



4 - completely incorrect



Methods

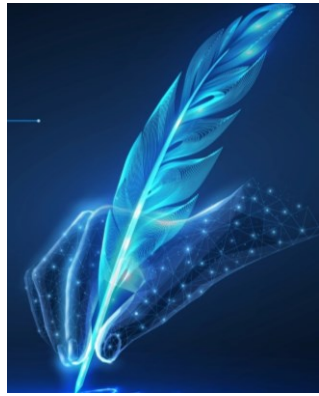
Validity VKT
questionnaire

ChatGPT and
Google Gemini
prompted VKT

Grading
ChatGPT
response

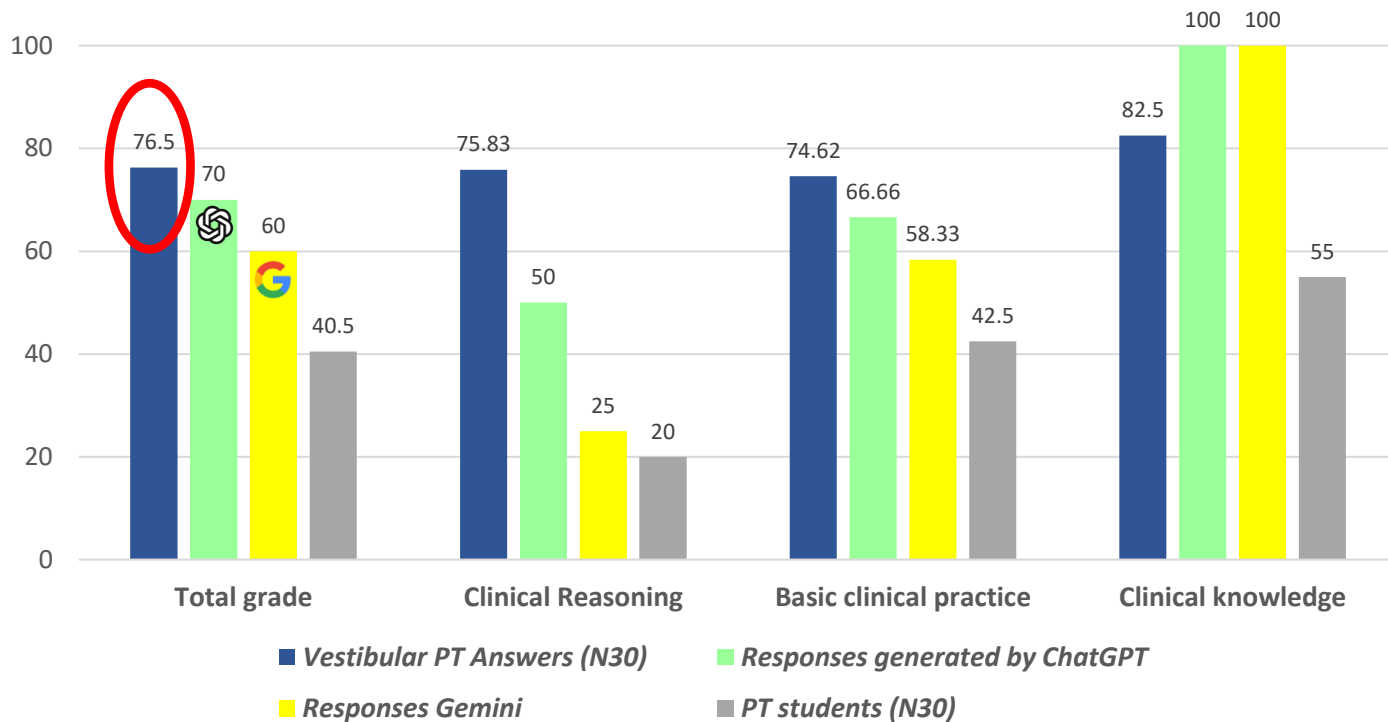
Statistical
analyses and
results

Discussion and
conclusion



Results - Performance by Question Type

Performance of ChatGPT, Google Gemini , the PTs and the PT Students on the VKT

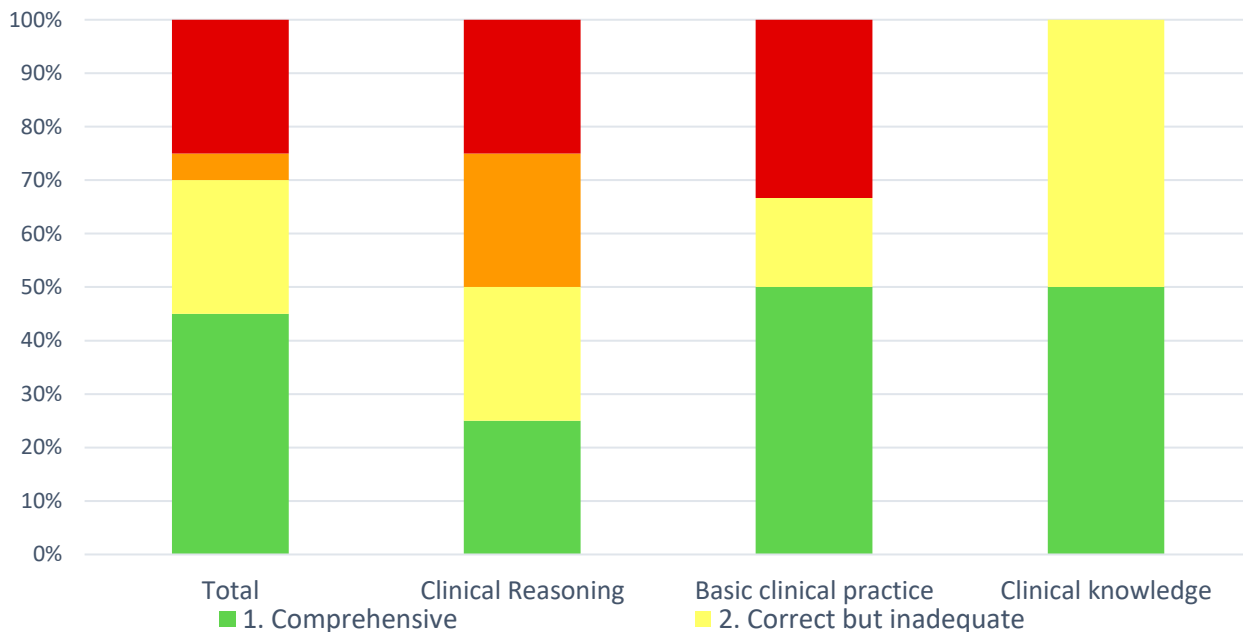


Results – ChatGPT text explanation accuracy

generated by ChatGPT-3.5 to questions



- completely incorrect
- correct but inadequate
- Mixed with correct and incorrect/outdated data
- Comprehensive

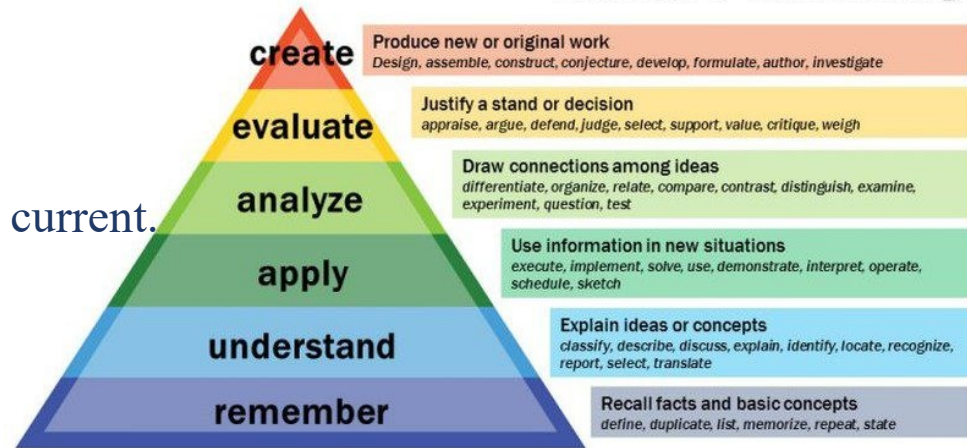


- Spearman correlation test – ($r_s = 0.68$ to 0.76 , $p < 0.05$) .

Conclusion

- Total grade: PTs > ChatGPT > Google Gemini > PT Students
- Prompt engineering makes a difference
- ChatGPT's info from articles, not always current.
- Avoid clinical reasoning questions
- Clinical reasoning: PTs > ChatGPT > Google Gemini
- Clinical knowledge: ChatGPT = Google Gemini > PTs

Bloom's Taxonomy



לצפייה במאמר המלא, סרקו את ה-QR



כל הזכויות שמורות ליעל ארבל. אין להעתיק או לשכפל את המידע ללא ציון מקור.
במידה ואתם משתמשים בתוכן מהמצגת או מהמאמר, אנא הקפידו לתת קרדיט מתאים.

Thank You For your attention

arbelclinic.co.il

yaelavi@gmail.com

052-3253506



Special thanks to those who contributed to the research:

Research advisors - Dr. Yoav Gimmon, Dr. Liora Shmueli

Expert consultants - Prof. Shupak Avi, Prof. Yahav Oron, Dr. Wolfovitz Amit