



Article

Assessing the Impact of Peyton's Teaching Method on Acquisition of Clinical Skills Among ENT Interns: A Prospective Study

Sindhu Viswanath ^{1,*}, Girish Subash ², Gauri Priya ², Lekshmi Reghunath ² and Meer M. Chisthi ³ 

¹ ENT Department, Government Medical College, Trivandrum 695011, India

² ENT Department, Government Medical College, Konni 689691, India; dr.girish.s@gmail.com (G.S.); gouritmc2k12@gmail.com (G.P.); rlekshmi1692@gmail.com (L.R.)

³ General Surgery Department, Government Medical College, Kollam 691574, India; meerchisthi@gmail.com

* Correspondence: sindhuvn@gmail.com; Tel.: +91-94-4781-9449

Abstract

Background/Objectives: Traditional demonstrations are a common way to teach clinical skills, but they often feel unstructured and inconsistent. Peyton's four-step approach provides a more organized, student-focused method that might help learners pick up skills better. This study compared the standard demonstration method with Peyton's approach for teaching ENT procedures to interns. **Methods:** A prospective study was conducted at a single center with two groups: Group A received a conventional single-pass demonstration. Group B was taught using Peyton's structured four-step approach (silent demonstration, deconstruction, verbal comprehension, and performed verbalization). Both groups were trained on three ENT skills—anterior rhinoscopy, Trotter's method, and anterior nasal packing—then tested using OSCE checklists. We also asked students for their feedback through a simple questionnaire. **Results:** For anterior rhinoscopy, both groups performed similarly. But students taught with Peyton's method did significantly better on Trotter's method and nasal packing ($p = 0.0098$ and 0.004). Overall, they preferred Peyton's approach, remembered the steps better, and wanted to use it for future training ($p < 0.005$). **Conclusions:** While traditional demonstrations are straightforward, Peyton's structured, hands-on four-step method leads to better skill learning and retention for medical students.

Keywords: anterior nasal packing; anterior rhinoscopy; Likert scale; Peyton's method; Trotter's method



Academic Editor: Vincent Cousins

Received: 28 December 2025

Revised: 6 February 2026

Accepted: 16 February 2026

Published: 24 February 2026

Copyright: © 2026 by the authors.

Licensee MDPI, Basel, Switzerland.

This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC BY\)](https://creativecommons.org/licenses/by/4.0/) license.

1. Introduction

Teaching clinical skills is central to medical education, and the chosen instructional method has important implications for learner engagement, competence, and patient safety. Traditional approaches such as Halsted's "see one, do one, teach one" model and conventional faculty demonstration emphasize observation followed by supervised performance, but often lack standardization and systematic learner involvement [1]. Effective acquisition of these skills requires not only imitation but also structured observation, deliberate practice, dialog, and timely feedback [2]. In the conventional demonstration method, the instructor explains and performs the procedure in a single, often unstructured sequence, after which the trainee attempts the skill with minimal guidance and limited opportunities for interaction. This model is time-efficient, easy to organize, and therefore widely used in settings with constraints on faculty numbers and teaching time [3,4]. However, its largely

passive format raises concerns about long-term skill acquisition, as students may not fully engage with the material, leading to weaker retention, lower proficiency, and delayed correction of errors due to restricted feedback opportunities [5].

To address these limitations, structured stepwise models for procedural training have been developed, among which Peyton's Four-Step Approach has gained particular prominence. To ensure clarity and reproducibility for educators and researchers, the Peyton approach can be deconstructed into its core objectives, theoretical underpinnings, and a strict procedural framework. The method's primary goal is to move a learner from initial observation to independent, competent performance while minimizing cognitive overload and error. Its design is explicitly built upon established educational principles, including the progression from "shows how" to "does" in Miller's Pyramid of clinical competence, the management of cognitive load by isolating and mastering sub-steps, and the reinforcement of learning through immediate, guided practice and verbalization.

Peyton's method comprises four stages—demonstration, deconstruction, comprehension, and performance—that progressively shift responsibility from teacher to learner [6]. Key reproducible elements include: the mandatory silence of Step 1; the explicit, stepwise verbalization in Step 2; the instructor-led, command-response nature of Step 3; and the critical requirement for concurrent performance and self-explanation in Step 4. Deviations, such as allowing questions during Step 1 or skipping the verbalization in Step 4, constitute a modification of the intervention. The method's efficacy in studies is intrinsically linked to this structured, sequential reduction in scaffolding, which systematically builds automaticity and understanding.

By requiring the trainee to verbalize the procedure and then perform it, this approach integrates cognitive processing with psychomotor practice, encourages active participation, and facilitates immediate, targeted feedback. Randomized trials and systematic reviews indicate that Peyton's approach can improve procedural performance, reduce time to competent execution, and enhance learner confidence compared with standard instruction, especially for complex skills and in settings with favorable teacher–student ratios.

However, implementation of Peyton's Four-Step Approach is resource intensive. It was originally conceptualized for skills-lab teaching with a low student-to-teacher ratio, and later work has explored modifications and peer-led variants to accommodate larger groups. Evidence suggests that its effectiveness may be influenced by the nature of the task, the complexity of the procedure, and the learning environment and that outcome may be attenuated when delivered with higher learner numbers or less experienced instructors. In contrast, conventional demonstration remains widely used in routine clinical teaching, despite uncertainty about its comparative effectiveness for specific procedural skills and its impact on longer-term competence.

In otorhinolaryngology, foundational procedures such as anterior rhinoscopy, Trotter's method, and anterior nasal packing are essential skills for interns and directly affect diagnostic accuracy and acute patient management. Conventionally, the instruction of core ENT procedures has often followed an apprenticeship-style model centered on passive observation and subsequent imitation. For anterior rhinoscopy—the foundational diagnostic examination of the nasal cavity using a speculum—the instructor typically demonstrates instrument handling and systematic visualization in a single, rapid pass. Trotter's method, a positional technique to control posterior epistaxis by having the patient sit forward, flex the neck, and apply pressure to the upper lip, is similarly shown as a whole sequence without structured breakdown. Likewise, anterior nasal packing, the therapeutic insertion of layered gauze or a nasal tamponade to arrest anterior bleeding, is demonstrated as a continuous procedure from preparation to securing the pack. In this traditional paradigm, the learner observes this live demonstration, sometimes with intermittent commentary, and

is then expected to replicate the skill, frequently during the same session, with guidance provided largely in reaction to errors—a model colloquially summarized as “see one, do one.” This approach, while experientially rooted, is inherently variable. It risks cognitive overload and inconsistent foundational understanding, as the systematic deconstruction of complex motor sequences and decision-making rationales is often left implicit, depending heavily on the instructor’s informal style and available time.

There is a relative paucity of data comparing structured stepwise methods like Peyton’s approach with conventional demonstration for teaching these ENT-specific skills. This study therefore sought to evaluate whether Peyton’s Four-Step Approach is more effective than conventional demonstration in teaching anterior rhinoscopy, Trotter’s method, and anterior nasal packing to ENT interns. The hypothesis was that Peyton’s method would result in higher OSCE scores and more favorable learner perceptions of skill acquisition and retention compared with traditional demonstration, thereby supporting its wider adoption in undergraduate ENT skills training.

2. Materials and Methods

2.1. Study Design and Setting

This quasi-interventional study ran for three months (October–December 2024) at Government Medical College (GMC), Konni, after receiving approval from the Institutional Research Committee (IRC).

2.2. Participants

We included interns undergoing their mandatory internship training at GMC Konni during the study period. We excluded interns who declined to participate in the OSCE exam. A total of 50 interns were recruited and randomly split into two equal groups using a lottery system (Group A: traditional demonstration, $n = 25$; Group B: Peyton’s four-step method, $n = 25$).

2.3. Intervention

Each group was broken into smaller batches of five interns. Both groups learned anterior rhinoscopy and anterior nasal packing using skill-lab models. Group A received the standard faculty demonstration, while Group B used Peyton’s four-step approach with a different faculty member of similar experience. Both teachers were trained on both methods beforehand. Trotter’s method was taught and tested on simulated patients for both groups.

To ensure a clear distinction between the two pedagogical approaches, the instructors adhered to strict protocols for each method. The conventional demonstration followed a traditional ‘see one, do one’ model: the instructor explained the indications and performed the entire procedure once on the skill-lab model (or simulated patient for Trotter’s method) at a normal pace, after which the interns immediately attempted the skill themselves with supervised practice.

In contrast, Peyton’s four-step approach was implemented in its structured sequence for each skill (see Supplementary Materials for a detailed example using anterior nasal packing). The core differentiator was the mandatory separation of observation, deconstruction, comprehension, and performance phases. Crucially, Step 1 was conducted in silence, Step 3 required the learner to verbally command the instructor, and Step 4 required the learner to simultaneously perform and self-verbalize the procedure. This design ensured active cognitive engagement and structured feedback, moving beyond passive observation.

2.4. Data Collection

Skills were tested right after training using validated OSCE checklists for all three procedures. Students also filled out a questionnaire rating their experience with each teaching method. Time for teaching was measured from start of instruction to completion of Step 4 (Peyton) or final demonstration (traditional).

2.5. Statistical Analysis

Data was entered in Excel and analyzed with Jamovi software (version 2.3). We reported numbers as means $\pm$ standard deviations and compared groups using Mann–Whitney U tests. By consensus among the researchers, performance was considered “good” if students scored $\geq 75\%$ (22.5/30) across all skills. Categorical data was compared with Chi-square tests, with $p < 0.05$ considered significant.

2.6. Ethical Considerations

The study was approved by the Institutional Ethics Committee and IRC. All participants gave written consent and could leave anytime. Random group assignment ensured fairness, no incentives were offered, and all data was kept anonymous and confidential.

3. Results

3.1. Study Population and Time Taken

Groups A (conventional demonstration) and B (Peyton’s four-step approach) were comparable in terms of gender distribution, with no significant differences (28 males [56%], 22 females [44%]). Table 1 summarizes the baseline demographic characteristics of the 50 participants (25 per group). Peyton’s method took approximately twice as long to teach each skill (Table 2).

Table 1. Baseline Demographic Characteristics ($n = 50$).

Gender-N(%)	Group A (Demonstration)	Group B (Peyton’s)
Male	13(52%)	15(60%)
Female	12(48%)	10(40%)

n = Number.

Table 2. Time taken for teaching each skill.

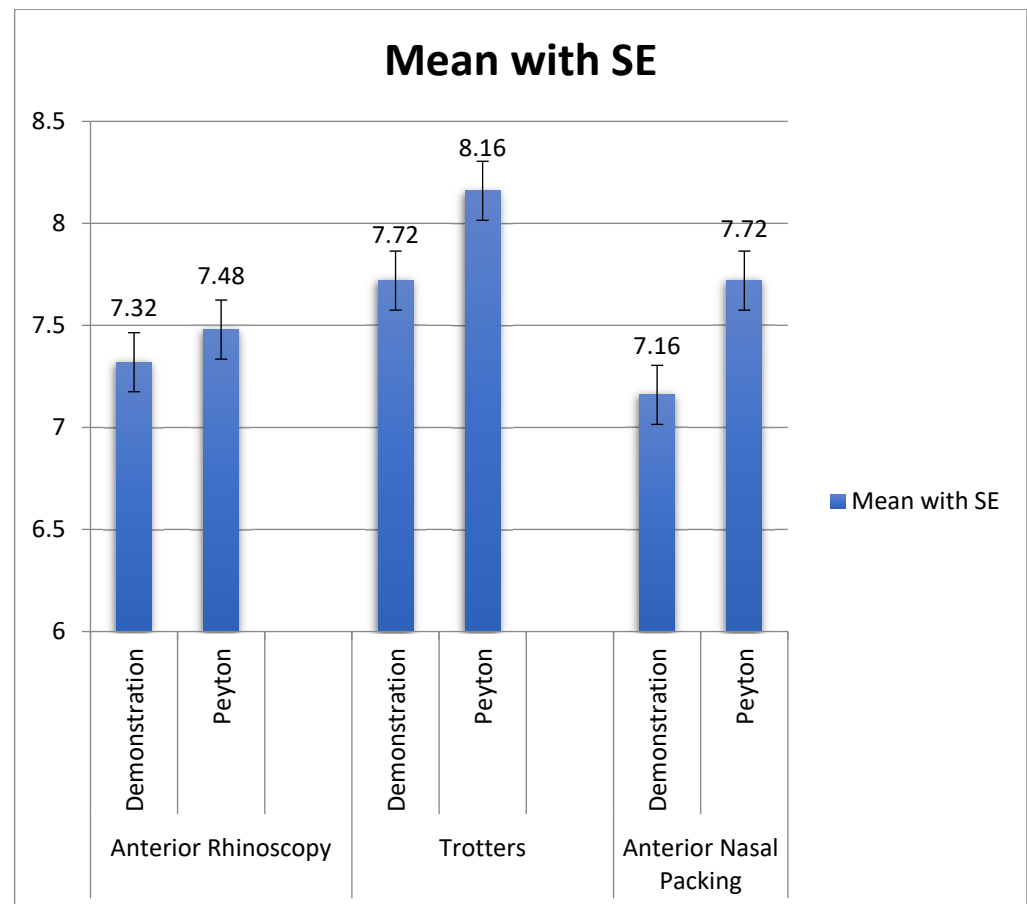
Skill	Group A (Demonstration)	Group B (Peyton’s)
Anterior Rhinoscopy	4 min	8 min
Trotter’s Method	6 min	12 min
Anterior Nasal Packing	10 min	20 min

3.2. Assessment Scores

Since scores for all three skills in both groups were non-normally distributed (Shapiro–Wilk test, $p < 0.001$), Mann–Whitney U tests were used to compare demonstration and Peyton’s groups. Table 3 presents the OSCE scores for each skill across groups. Significant differences favored Peyton’s method for Trotter’s method ($p < 0.05$) and anterior nasal packing ($p < 0.05$), but not for anterior rhinoscopy ($p > 0.05$). Figure 1 provides graphical representations of these comparisons. Scores ranged from 0–10, with higher scores indicating better performance.

Table 3. Comparison of the OSCE Score in Assessment of skills.

Procedure	Group	Mean (SD)	95% CI	<i>p</i> -Value	Cohen's <i>d</i>	Effect Size
Anterior Rhinoscopy	Demonstration	7.32 (0.476)	7.12 to 7.52	0.347	0.30	Small
	Peyton's	7.48 (0.586)	7.24 to 7.72			
Trotter's Method	Demonstration	7.72 (0.458)	7.53 to 7.91	0.0098 *	0.81	Large
	Peyton's	8.16 (0.624)	7.90 to 8.42			
Anterior Nasal Packing	Demonstration	7.16 (0.624)	6.90 to 7.42	0.004 *	0.90	Large
	Peyton's	7.72 (0.614)	7.47 to 7.97			

*: significant *p*-value.**Figure 1.** OSCE scores for each skill across groups.

Based on the standardized mean difference (Cohen's *d*), the effect of the intervention varied by procedure. For Anterior Rhinoscopy, a small, non-significant effect was observed ($d = 0.30$, 95% CI: -0.27 to 0.87). In contrast, both Trotter's Method ($d = 0.81$, 95% CI: 0.22 to 1.40) and Anterior Nasal Packing ($d = 0.90$, 95% CI: 0.30 to 1.50) demonstrated a large, statistically significant effect favoring Peyton's method over the standard demonstration.

3.3. Outcome Ratings

Chi-square testing indicated significantly higher good performance rates in Peyton's group (92%) compared to the conventional group (32%; $p < 0.001$). Table 4 shows the distribution of performance ratings, categorized as "good" (total score $\geq 75\%$, or $22.5/30$ across skills).

Table 4. Good Performance rating ($n = 50$).

Assessment	Demonstration $n(\%)$	Peyton's $n(\%)$	Total	χ^2 df1	p -Value
Good Performance	8(32%)	23(92%)	31	19.1	<0.001 *
Poor Performance	17(68%)	2(8%)	19		

*: significant p -value.

3.4. Perception Responses

Table 5 details Likert-scale questionnaire responses, analyzed via Mann–Whitney U tests. Peyton's group reported significantly better skill memory recall ($p = 0.004$) and greater endorsement for applying the method to other skills ($p = 0.005$). No significant differences emerged in other perception domains (e.g., conceptual understanding, doubt clarification). These results reflect short-term learner perceptions post-training.

Table 5. Inter-group comparison of responses in Perception.

Statement	Group A $n(\%)$	Group B $n(\%)$	p -Value
Learning session was interesting			
Strongly Agree	8(32%)	16(64%)	0.051
Agree	17(68%)	9(36%)	
Understanding concepts was better			
Strongly Agree	9(36%)	8(32%)	0.777
Agree	16(64%)	17(68%)	
Able to clarify doubts			
Strongly Agree	10(40%)	10(40%)	1.00
Agree	15(60%)	15(60%)	
Helps to retain in memory			
Strongly Agree	5(20%)	14(56%)	0.004 *
Agree	20(80%)	11(44%)	
Helps to improve performance			
Strongly Agree	6(24%)	12(48%)	0.082
Agree	19(76%)	13(52%)	
Method can be used in teaching other skills			
Strongly Agree	6(24%)	17(68%)	0.005 *
Agree	19(76%)	8(32%)	
Method effective and beneficial to me			
Strongly Agree	11(44%)	16(64%)	0.164
Agree	14(56%)	9(36%)	

*: significant p -value.

4. Discussion

This study compared Peyton's Four-Step Approach with traditional faculty demonstration when teaching three important ENT skills—anterior rhinoscopy, Trotter's method, and anterior nasal packing—to interns at a government medical college. The results clearly showed that interns trained using Peyton's method performed significantly better on the more challenging procedures: Trotter's method ($p = 0.0098$) and anterior nasal packing

($p = 0.004$). Interestingly, for the simpler diagnostic skill of anterior rhinoscopy, both groups scored about the same. These findings make sense—they support the idea that Peyton’s structured, interactive approach really shines for skills that require more complex thinking, hand-eye coordination, and step-by-step practice, while it does not offer much extra benefit for straightforward observation tasks that interns might pick up more easily either way.

The superior performance for Trotter’s method and anterior nasal packing in the Peyton group can be directly attributed to the method’s structural differences from the conventional demo. For these more complex procedures, the systematic deconstruction (Step 2) likely reduced cognitive load by breaking down the skill into manageable segments. The comprehension phase (Step 3), where learners verbally guided the instructor, reinforced the sequence and decision-making rationale before any hands-on attempt. Finally, the requirement for concurrent performance and self-explanation (Step 4) integrated cognitive and psychomotor processing, solidifying learning. The conventional method, with its single, integrated demonstration, lacked these specific scaffolds for managing complexity.

Numerous studies have substantiated the advantages of Peyton’s Four-Step Approach over traditional methods in clinical skills training across various disciplines. Šurda et al. conducted a comprehensive review of ENT procedural education and concluded that passive observation, characteristic of conventional demonstration, results in slower skill acquisition, diminished learner confidence, and the necessity for repeated practice sessions to achieve mastery [7]. Varghese’s comparative study of Peyton’s approach against conventional bedside teaching in medical students further corroborated its efficacy for clinical examination skills, noting sustained improvements in accuracy and speed [8]. Similarly, Garg’s randomized controlled trial among undergraduates demonstrated that Peyton’s method facilitated faster skill mastery and translated to superior performance in authentic clinical scenarios [9]. The modified Peyton’s approach for instructing small groups in skills-lab training sessions proved practicable, well-accepted by trainees, and easy for tutors to implement [10].

These findings together show that Peyton’s step-by-step model—from the teacher quietly demonstrating, to students describing what they are doing, then practicing under guidance, and finally doing it independently—really helps connect “knowing about” a skill with actually being able to do it well. This works especially well for procedures like nasal packing that need exact steps and good hand-eye coordination.

4.1. Memory Retention and Cognitive Reinforcement

A key strength of this study was the assessment of learner perceptions, which revealed a statistically significant preference for Peyton’s method in fostering memory recall of skills ($p = 0.004$). This observation is consistent with Amaral et al.’s investigation into knowledge and skill retention among medical students, where structured teaching paradigms outperformed unstructured ones in promoting long-term encoding and retrieval [11]. Giacomino et al.’s meta-analysis further provides robust evidence, pooling data from multiple randomized trials to confirm Peyton’s superior impact on procedural skill acquisition across health professions education [12]. The cognitive benefits likely stem from the method’s deconstruction and comprehension phases, which compel learners to articulate procedural steps, thereby reinforcing neural pathways for both explicit memory (knowing “what” and “how”) and implicit memory (automatic execution). In contrast, conventional demonstration’s single-pass format may limit such deepening, leading to superficial familiarity rather than durable competence.

4.2. Student Satisfaction and Practical Implications

Interns trained via Peyton's method consistently rated it higher across multiple domains, including conceptual clarity, doubt resolution, performance enhancement, and overall session interest, with the most pronounced difference in their endorsement for applying it to other skills ($p = 0.005$). These perceptions echo Sherif et al.'s findings, where students perceived the video-modified Peyton's 4-step technique as a well-structured, engaging, and adaptable method for learning spinal and neurological examinations in small groups, particularly valuing its integration of video-based instruction for understanding procedural steps [13].

However, some studies have not found superiority for Peyton's method. Traditional teaching and Peyton's 4-step approach demonstrated equivalent effectiveness in teaching basic musculoskeletal ultrasound skills to undergraduate medical students, with qualitative analysis revealing high acceptance of both peer teaching strategies in a study by Gradl-Dietsch et al. [14]. Despite the benefits, Peyton's approach demands greater faculty time and preparation, as well as smaller group sizes for optimal delivery—challenges acknowledged in resource-constrained settings like ours, where we adapted it to cohorts of five using skill-lab models and simulated patients.

4.3. Comparison with Similar Research in Otorhinolaryngology

The findings of this study, which demonstrate the efficacy of Peyton's four-step method for teaching anterior rhinoscopy and related procedures, resonate with and extend a growing body of ENT-specific research advocating for structured, competency-based training frameworks. Our results, which show improved skill acquisition, and learner confidence, align with the core objective identified by the Lechner/Sharaf group: the need for reliable, objective metrics to assess procedural competency beyond traditional apprenticeship [15]. Their validation of tools like the OSCE for head and neck examination provides a crucial benchmark, against which new pedagogical methods, such as the one evaluated here, can be measured. Furthermore, their critical insights into skill misjudgment following exclusively digital training underscore the indispensable role of deliberate, hands-on psychomotor practice—a need that structured in-person methods like Peyton's are specifically designed to address [16,17]. By providing a standardized, reproducible framework for skill deconstruction, our application of Peyton's method offers a practical implementation pathway for the kind of systematic curriculum design championed by Weimer et al. [18]. The applicability and benefits of Peyton's four-step method extend beyond foundational ENT procedures, as evidenced by its successful adaptation to related diagnostic and imaging skills, as well as its proven efficacy in skill acquisition across health professions education. For instance, a recent randomized controlled trial demonstrated that Peyton's method, when combined with a flipped classroom model, significantly improved the skill operation and clinical case analysis scores of resident trainees in thyroid and cervical lymph node ultrasound zoning compared to traditional instruction [19]. This application underscores the method's utility for teaching complex sonographic anatomical navigation and image interpretation, skills increasingly vital in modern otolaryngology diagnostics. Thus, this study contributes to the established trajectory of ENT education research by operationalizing a validated instructional strategy that bridges the gap between theoretical curriculum models and consistent, high-fidelity procedural training at the learner's side.

4.4. Strengths and Limitations

The study's strengths include its forward-looking design, use of validated OSCE checklists, blind scoring by independent evaluators, and capturing both hard performance data and student feedback. On the flip side, it was conducted at just one center with

a relatively small group of interns, only looked at immediate results rather than long-term skill retention, and did not test how skills held up over time. There is also the chance that slight differences between the two teachers could have influenced results due to the instructor effect, even though they had similar experience and training. Also, another limitation of this study is the difficulty in determining whether the outcomes are attributable to the core principles of Peyton's method or to potential inconsistencies in how the conventional teaching approach was delivered. This confine our conclusion to the specific implementations compared.

4.5. Overall Impact

These results make a strong case for adding Peyton's Four-Step Approach to ENT training programs, especially for moderately complex procedures. It could really help bridge the gap between classroom learning and real patient care, building student confidence and skills early on—which ultimately means safer patient care from new doctors. While Peyton's method took longer, the improved outcomes may justify the additional time investment. The extent, to which the observed advantage is intrinsic to Peyton's method, rather than a consequence of uneven implementation rigor, remains unclear. This ambiguity highlights the need for precise protocol definition and fidelity checks in future comparative research. For resource-constrained settings, Peyton's method could be reserved for complex skills. Future studies should test it across more hospitals, look at costs, and see if it works just as well for residents and in different training environments.

5. Conclusions

Peyton's Four-Step Approach worked much better than traditional demonstration for teaching more complex ENT skills like Trotter's method and nasal packing to interns. Students using this method obtained significantly higher OSCE scores ($p < 0.01$) and reported better memory retention and overall satisfaction. For simpler tasks like anterior rhinoscopy, both groups performed about equally, but Peyton's structured, hands-on style still led to greater student engagement, confidence, and skill mastery across the board.

These results make a clear case for adding Peyton's approach to ENT training programs for medical students, especially using skill labs and simulated patients that work well even with limited time and faculty. By encouraging active practice and focused feedback, it overcomes the shortcomings of standard lectures and demos, helping new doctors become more competent sooner—which means safer patient care. Future studies across multiple centers should check long-term skill retention, how well it scales in different settings, and whether it is cost-effective for wider use.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/ohbm7010011/s1>, Figure S1: Peyton's method flowchart; Table S1: Differences between Peyton's Teaching Method and the Conventional teaching method; Table S2: OSCE Evaluation Sheet for Anterior Rhinoscopy; Table S3: OSCE Evaluation Sheet for Trotter's Method; Table S4: OSCE Evaluation Sheet for Anterior Nasal Packing; Table S5: Likert Scale of Perception.

Author Contributions: Conceptualization, S.V.; methodology, G.P. and L.R.; software, L.R.; validation, G.S. and G.P.; formal analysis, S.V.; investigation, S.V. and G.S.; resources, G.S. and L.R.; data curation, G.P.; writing—original draft preparation, S.V. and M.M.C.; writing—review and editing, S.V. and M.M.C.; visualization, G.P.; supervision, S.V. and G.S.; project administration, S.V. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of Government Medical College Konni (IRCN0:13/IRC, approval date 25 September 2024).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors on request.

Acknowledgments: We are thankful to Asha KP, Department of Community Medicine at GMC Konni for helping us with the statistical analysis.

Conflicts of Interest: The authors declare no conflicts of interest.

References

- Romero, P.; Günther, P.; Kowalewski, K.F.; Friedrich, M.; Schmidt, M.W.; Trent, S.M.; De La Garza, J.R.; Müller-Stich, B.P.; Nickel, F. Halsted's "See One, Do One, and Teach One" versus Peyton's Four-Step Approach: A Randomized Trial for Training of Laparoscopic Suturing and Knot Tying. *J. Surg. Educ.* **2018**, *75*, 510–515. [[CrossRef](#)] [[PubMed](#)]
- Dhaliwal, U.; Supe, A.; Gupta, P.; Singh, T. Producing Competent Doctors—The Art and Science of Teaching Clinical Skills. *Indian Pediatr.* **2017**, *54*, 403–409. [[CrossRef](#)] [[PubMed](#)]
- Burgess, A.; van Diggele, C.; Roberts, C.; Mellis, C. Feedback in the clinical setting. *BMC Med. Educ.* **2020**, *20*, 460. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Prober, C.G.; Khan, S. Medical education reimaged: A call to action. *Acad. Med.* **2013**, *88*, 1407–1410. [[CrossRef](#)] [[PubMed](#)]
- Blue, A.V.; Stratton, T.D.; Plymale, M.; DeGnore, L.T.; Schwartz, R.W.; Sloan, D.A. The effectiveness of the structured clinical instruction module. *Am. J. Surg.* **1998**, *176*, 67–70. [[CrossRef](#)] [[PubMed](#)]
- Walker, M.; Peyton, R. Teaching in the theatre. In *Teaching and Learning in Medical Practice*; Peyton, J.W.R., Ed.; Manticore Europe Limited: Rickmansworth, UK, 1998; pp. 171–180.
- Šurda, P.; Barac, A.; MobarakiDeghani, P.; Jacques, T.; Langdon, C.; Pimentel, J.; Mathioudakis, A.G.; Tomazic, P.V. Training in ENT; a comprehensive review of existing evidence. *Rhinol. Online* **2018**, *1*, 77–84. [[CrossRef](#)]
- Varghese, S.; Abraham, L. Comparison of Peyton's Four-Step Approach with the Conventional Bedside Technique in Teaching Clinical Examination Skills to Medical Students. *Cureus* **2024**, *16*, e54397. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Garg, R.; Sharma, G.; Chaudhary, A.; Mehra, S.; Loomba, P.S.; Chauhan, V.D. Evaluation of Peyton's Four-Step Approach for Skill Acquisition in Undergraduate Medical Students: A Prospective Randomized Study. *medRxiv* **2023**, arXiv:07.27.23293240. [[CrossRef](#)]
- Nikendei, C.; Huber, J.; Stiepak, J.; Huhn, D.; Lauter, J.; Herzog, W.; Jünger, J.; Krautter, M. Modification of Peyton's four-step approach for small group teaching—A descriptive study. *BMC Med. Educ.* **2014**, *14*, 68. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Amaral, F.; Troncon, L.E.A. Retention of Knowledge and Clinical Skills by Medical Students: A Prospective, Longitudinal, One-Year Study Using Basic Pediatric Cardiology as a Model. *Open Med. Educ. J.* **2013**, *6*, 48–54. [[CrossRef](#)]
- Giacomino, K.; Caliesch, R.; Sattelmayer, K.M. The effectiveness of the Peyton's 4-step teaching approach on skill acquisition of procedures in health professions education: A systematic review and meta-analysis with integrated meta-regression. *PeerJ* **2020**, *8*, e10129. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Sherif, R.; John, E.; McCarthy, M.J.H. Exploring medical student perceptions of a video-modified Peyton's 4-step technique for teaching spinal and neurological examinations. *Med. Educ. Online* **2025**, *30*, 2519391. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Gradl-Dietsch, G.; Hitpaß, L.; Gueorguiev, B.; Nebelung, S.; Schradling, S.; Knobe, M. Undergraduate Curricular Training in Musculoskeletal Ultrasound by Student Teachers: The Impact of Peyton's Four-Step Approach. *Z. Orthop. Unfall* **2019**, *157*, 270–278. (In English and German) [[CrossRef](#)] [[PubMed](#)]
- Sharaf, K.; Felicio-Briegel, A.; Widmann, M.; Huber, J.; Eggersmann, T.K.; Stadlberger, U.; Schrötzlmair, F.; Canis, M.; Lechner, A. ToSkORL: Selbst- und Fremdeinschätzung bei der Untersuchung des Kopf-Hals-Bereichs [ToSkORL: Self- and objective assessment of examination skills in the head and neck region]. *HNO* **2022**, *70*, 295–303. (In German) [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Lechner, A.; Haider, S.P.; Paul, B.; Escrihuela Branz, P.F.F.; Felicio-Briegel, A.; Widmann, M.; Huber, J.; Stadlberger, U.; Canis, M.; Schrötzlmair, F.; et al. Misjudgment of Skills in Clinical Examination Increases in Medical Students Due to a Shift to Exclusively Online Studies during the COVID-19 Pandemic. *J. Pers. Med.* **2022**, *12*, 781. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
- Lechner, A.; Haider, S.P.; Branz, P.E.; Paul, B.; Kashani, F.; Canis, M.; Schrötzlmair, F.; Sharaf, K. Medical education during the COVID-19 pandemic: An online-only course can achieve good to medium psychomotor skill level of basic head and neck examination. *Heliyon* **2024**, *10*, e38044. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]

18. Weimer, J.; Lippe, A.; Brandt, M.; Rink, M.; Morlock, L.; Künzel, J.; Symeou, L.; Weimer, L.; Sproll, C.; Buggenhagen, H.; et al. Bridging a curriculum gap: A structured model for integrating head and neck ultrasound training into undergraduate dental education. *BMC Med. Educ.* **2026**, *26*, 145. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]
19. Wang, J.; Zhan, Y.; Sun, B.; Bi, Y.; Li, R.; Jiang, F.; Peng, M. Flipped classroom-based application of Peyton's four-step approach in standardized training of ultrasound residents for thyroid and cervical lymph node zoning. *PeerJ* **2024**, *12*, e18633. [[CrossRef](#)] [[PubMed](#)] [[PubMed Central](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.