## Original Article

# Evaluation of learning approaches in physiotherapy students: A valuable insight

**Prachita P. Walankar, Vrushali P. Panhale, Sayli A. Situt**

**Abstract:**

**INTRODUCTION:** Every individual has different learning approaches in acquisition and processing of knowledge. Physiotherapy, an evolving allied health science profession, is developing rapidly. Exploration of learning approaches among physiotherapy students will help the academicians to enrich the quality of learning. This study aimed to analyze the learning approaches among physiotherapy students.

**MATERIALS AND METHODS:** A cross-sectional study was carried out among 435 physiotherapy students. The Approaches and Study Skills Inventory for Students questionnaire was used to evaluate learning approaches in both preclinical and clinical students. Data were analyzed using the Statistical Package for the Social Sciences software version 21. Statistical significance was set at $P < 0.05$.

**RESULTS:** A total of 435 participants, 233 (53.56%) in preclinical phase and 202 (46.44%) in clinical phase with a mean age of 19.01 ± 1.01 and 22.03 ± 1.43 years, respectively, participated in the study. Among the 435 students, 411 (94.49%) adopted the deep approach, while only 21 (4.83%) and 3 (0.69%) adopted strategic approach and surface approach, respectively. Preclinical students had significantly higher mean scores for strategic and surface approaches than clinical ($P = 0.000$) and ($P = 0.000$) using independent $t$-test, respectively. Out of the 435 students, 50 (11.45%) were male and 385 (88.51%) were female. Male students appeared less likely to adopt the deep learning approach than female students ($P = 0.013$).

**CONCLUSIONS:** Assessment of learning approaches will assist the academicians to develop teaching and learning strategies and effective curriculum depending on the perspectives of students. Multiple methodologies focused on interactive student-centric approach should be utilized to enhance positive learning outcomes.

**Keywords:**

Evaluation, learning approach, medical education, physiotherapy specialty, teaching

*Department of Musculoskeletal Physiotherapy, Mahatma Gandhi Mission's College of Physiotherapy, Navi Mumbai, Maharashtra, India*

**Address for correspondence:**
Dr. Prachita P. Walankar, Department of Musculoskeletal Physiotherapy, Mahatma Gandhi Mission's College of Physiotherapy, At Junction NH-4, Sion-Panvel Expressway, Sector-1, Kamothe, Navi Mumbai - 410 209, Maharashtra, India.
E-mail: prachita30@gmail.com

## Introduction

Every individual thinks and learns in different ways and has a preference or style in processing certain types of information. A learning approach is defined as the strategy adopted by the learner to most efficiently perceive, comprehend, process, analyze, and retrieve the information while seeking knowledge.[1] The ability of students to achieve the highest quality of learning is dependent on multi-factorial characteristics such as aptitude and attitude of the student, curriculum of the course, competence and strategies adopted by teachers, examination process, availability of learning resources, and educational climate.[2]

Learning approach, a natural and habitual trait, adopted by students is individualized. Primarily, learning approaches are classified into three types, namely, deep approach, surface approach, and strategic approach.[3] Deep approach is a systematic and structured learning approach where

**How to cite this article:** Walankar PP, Panhale VP, Situt SA. Evaluation of learning approaches in physiotherapy students: A valuable insight. J Edu Health Promot 2019;8:25.

the emphasis is placed on understanding the concepts and relating ideas to enhance the learning process. Surface approach is characterized by superficial learning and rote memorization with specific emphasis on syllabus-bound material. Strategic approach involves proper study organization and concentration more on the subject matter and evaluation format which results in fragmented understanding of the concept and leads to poor assimilation of the information.[3,4]

Maintaining high academic standards and quality of learning in today's diversified educational era imparts major obstacle for many teachers.[5] During the course of physiotherapy education, students have to retain a large amount of knowledge, skill, and competence in multiple disciplines in a short period of time.[6] Recently, there is a paradigm shift in the trend of medical education from pedagogy to andragogy, that is, from a teacher-centered learning to a student-centered learning.[7,8] Hence, the academicians should recognize that learning approaches adopted by adults are different and they should tailor instructions to the characteristic ways in which the adults prefer to learn. There is a wide continuum of diversity with regard to age, life experience, culture, ethnicity, and level of preparedness among physiotherapy students which may account in the usage of varied learning approaches. This diversity presents a challenge for teachers to cater to the educational need of all students.[9,10] Hence, this study aimed to assess the learning approaches in physiotherapy students using the Approaches and Study Skills Inventory for Students (ASSIST) inventory and determine whether learning styles differed between preclinical and clinical physiotherapy students.

## Materials and Methods

A cross-sectional, questionnaire-based study was conducted on physiotherapy students. Physical therapy undergraduate curriculum comprises of a 4½ year, full-time program that culminates in a professional qualification and a bachelor of physiotherapy degree. The postgraduate training course comprises of a 2-year program with focus on the specialty subjects.[11] Preclinical students comprise of physiotherapy students in the 1st, 2nd, and 3rd years where the primary focus is on learning fundamental subjects. Clinical students comprise of physiotherapy students in the 4th year, internship, and postgraduate training. The main method of learning in the clinical phase is through actual hands on skills, and patient and case-based teaching. The study population consisted of 233 preclinical (1st, 2nd, and 3rd years) and 202 clinical (final year, intern, and postgraduate) physiotherapy students. The study was conducted from August to December 2017. Participation in the study was on a voluntary basis, and a declaration of informed consent was obtained from students before participating in the study. All participants were assured confidentiality. A brief explanation about the objective of the study was given to the students and they were asked to complete the questionnaire. The study was approved by the Institutional Research Review Committee (Ref No. MGM/COP/IRRC/121/2017). For the undergraduate students, the questionnaires were distributed during the lectures. Postgraduate students were approached individually during working hours and were invited to participate in the study.

Demographic information such as age and gender were noted. We used the ASSIST questionnaire, developed by Entwistle and McCune, for evaluation of the learning approaches adopted by the physiotherapy students.[12] It is a revised version of the Approaches to Studying Inventory. Each question is scored by the respondent on a 5-point Likert scale of scales (1–disagree and 5–agree). The first part of the questionnaire includes six statements and deals with the respondent's perception of learning. The second section of the questionnaire comprises of the actual approaches to studying. It comprises 52 questions, each scored on a 5-point Likert scale (1–disagree and 5–agree), with 16 questions pertaining to surface and deep approaches each and 20 questions relating to strategic approach. It consists of 52 items combined into 13 subscales of four items each, which are then further grouped into the three main scales: deep approach, strategic approach, and surface apathetic approach. Four subscales are present in both the deep and surface approaches, whereas five subscales in the strategic approach. The highest mean score was used to determine the predominant learning approach used by the students. The third section consists of eight statements that assess the preference of course type and teaching methods and was answered using a like–dislike scale (1–definitely like and 5–definitely dislike).[13]

### Statistical analysis

Data were compiled in an MS Office Excel spreadsheet. Data were analyzed using the Statistical Package for the Social Sciences software version 20.0 (IBM Corporation, Armonk, NY, USA). Descriptive statistics were used to describe the demographic characteristics of the students. Mean and standard deviation values were calculated for continuous variables. Categorical variables were reported as proportions and percentages. Unpaired *t*-test was used to identify the significant differences between preclinical and clinical students and also gender differences. $P < 0.05$ was considered statistically significant.

## Results

The demographic characteristics of the study participants are shown in Table 1. Of the 435 participants, 233 (53.56%)

were in preclinical phase and 202 (46.44%) were in clinical phase. The mean age of the preclinical and clinical students was 19.01 ± 1.01 and 22.03 ± 1.43 years, respectively. Of the 435 students, 50 (11.45%) were male participants and 385 (88.51%) were female participants.

Among 435 physiotherapy students, 411 (94.49%) adopted the deep approach predominantly, while only 21 (4.83%) and 3 (0.69%) adopted the strategic approach and surface approach, respectively. In the preclinical group, 91.42%, 8.15%, and 0.43% of students preferred deep, strategic, and surface approaches, respectively. Whereas in the clinical group, 98.02%, 4.83%, and 0.69% of students preferred deep, strategic, and surface approaches, respectively [Table 2].

It was observed that the preclinical students had significantly higher mean scores for strategic ($P = 0.000$) and surface ($P = 0.000$) approaches as compared to clinical students using independent *t*test. Mean scores for the deep approach did not differ significantly between the clinical and preclinical students ($P = 0.836$). It was also noted that preclinical students preferred teaching that encouraged understanding of concept than transmitting information as compared to clinical students using independent *t*-test ($P = 0.039$) [Table 3].

A significant difference was observed for mean score of deep approach among males and females using independent *t*-test ($P = 0.13$). It depicted that females preferred deep learning approach as compared to males [Table 4].

## Discussion

The present study analyzed the learning approaches among physiotherapy students using ASSIST questionnaire. It was observed that preclinical and clinical students preferred deep approach as compared to strategic and surface approaches. Learning is a process of acquisition of knowledge which takes place through active engagement, participation, and collaboration between learners and educators. The topic to be learned, context, teaching strategies, the nature of educational environment, and evaluation strategies control the learning approach adopted by the student. These factors differ in preclinical and clinical physiotherapy students.[14]

The preclinical program focuses on the acquisition of basic knowledge of medical sciences that involves intricate information.[15] During the preclinical phase, the teaching methods employed include didactic-based classroom lectures, problem-based learning, and written reports in our setup. This may lead to more passive learning and promote strategic and surface

**Table 1: Demographic characteristics of the preclinical and clinical physiotherapy students**

| Variable | Preclinical (*n*=233) | Clinical (*n*=202) | Total (*n*=435) |
|---|---|---|---|
| Male | 31 | 19 | 50 |
| Female | 202 | 183 | 385 |
| Age (years) Mean±SD | 19.01±1.01 | 22.03±1.43 | 20.41±1.94 |

**Table 2: Distribution of learning approaches among preclinical and clinical physiotherapy students**

| Learning approaches | Preclinical (*n*=233), *n* (%) | Clinical (*n*=202), *n* (%) | Total (*n*=435), *n* (%) |
|---|---|---|---|
| Deep approach | 213 (91.42) | 198 (98.02) | 411 (94.49) |
| Strategic approach | 19 (8.15) | 2 (0.99) | 21 (4.83) |
| Surface approach | 1 (0.43) | 2 (0.99) | 3 (0.69) |

**Table 3: Comparison of mean scores of learning approaches and subscale scores in preclinical and clinical physiotherapy students**

| Domain | Preclinical (*n*=233) | Clinical (*n*=202) | *t* | *P* |
|---|---|---|---|---|
| Conceptions of learning | | | | |
| Learning as reproducing | 12.7±1.99 | 13.05±1.84 | −1.897 | 0.05* |
| Learning as transforming | 12.48±2.12 | 12.79±1.65 | −1.666 | 0.096 |
| Approaches to studying | | | | |
| Deep approach | 77.93±7.91 | 78.09±8.45 | −0.207 | 0.836 |
| Seeking meaning | 15.57±2.45 | 15.61±2.31 | −0.185 | 0.853 |
| Relating ideas | 15.8±2.28 | 15.79±2.32 | 0.025 | 0.980 |
| Use of evidence | 15.61±2.42 | 15.81±2.45 | −0.848 | 0.397 |
| Interest in ideas | 15.18±2.39 | 14.95±2.42 | 1.033 | 0.302 |
| Monitoring effectiveness | 15.76±2.29 | 15.93±2.24 | −0.761 | 0.447 |
| Strategic approach | 64.77±10.99 | 59.55±8.09 | 5.571 | 0.000* |
| Organized studying | 14.63±2.72 | 14.79±2.8 | −0.642 | 0.521 |
| Time management | 19.37±7.77 | 14.46±2.64 | 8.572 | 0.000* |
| Alertness to assessment demands | 15.59±2.52 | 14.77±2.87 | 3.208 | 0.001* |
| Achievement | 15.18±2.39 | 15.53±2.51 | −1.506 | 0.133 |
| Surface approach | 59.49±7.26 | 53.7±10.34 | 6.821 | 0.000* |
| Unrelated memorizing | 14.64±2.66 | 13.14±3.21 | 5.346 | 0.000* |
| Lack of purpose | 14.63±0.33 | 12.42±3.84 | 6.443 | 0.000* |
| Syllabus boundness | 14.92±2.84 | 13.12±3.35 | 6.083 | 0.000* |
| Fear of failure | 15.29±0.45 | 15.03±2.85 | 1.031 | 0.303 |
| Preferences for teaching | | | | |
| Encourages understanding | 16.04±2.76 | 15.52±2.48 | 2.067 | 0.039* |
| Transmits information | 16.21±2.59 | 16.05±2.69 | 0.596 | 0.551 |

*$P<0.05$ is statistically significant

learning. In contrast, clinical students were more likely to have an active learning style. The teaching methods employed during the clinical years involve clinical and community-based learning. It includes case-based learning with practice on patients in real situations to learn new skills. The basic knowledge acquired in the

**Table 4: Comparison of mean scores of learning approaches among physiotherapy students based on gender**

| Learning approaches | Male | Female | *t* | *P* |
|---|---|---|---|---|
| Conceptions of learning | | | | |
| Learning as reproducing | 12.7±2.03 | 12.89±1.92 | −0.649 | 0.51 |
| Learning as transforming | 12.22±2.39 | 12.68±1.85 | −1.598 | 0.111 |
| Approaches to studying | | | | |
| Deep approach | 75.32±7.47 | 78.35±8.18 | −2.487 | 0.013* |
| Strategic approach | 61.10±9.23 | 62.51±10.19 | −0.929 | 0.353 |
| Surface approach | 57.18±8.08 | 56.75±9.43 | 0.306 | 0.760 |
| Preferences for teaching | | | | |
| Encourages understanding | 15.76±2.95 | 15.81±2.6 | −0.114 | 0.910 |
| Transmits information | 15.44±2.24 | 16.23±2.68 | −1.986 | 0.04* |

*$P < 0.05$ is statistically significant

preclinical years is applied to medical conditions during the clinical years.[16] In the clinical phase, more emphasis is placed on problem-based learning approach, which is primarily responsible to increase deep learning.[17] Deep learning process enhances critical thinking and personal development among learners. This in-depth processing of knowledge skills is essential in clinical phase to formulate rational hypotheses and management plans for patients.[18]

With an emerging global trend in the medical education, there is a paradigm shift from traditional method of teaching toward deeper and integrated problem-based learning. Furthermore, internal motivation toward physiotherapy profession may be one of the reasons toward deep learning approach adopted by the students in our study.

Many studies have been conducted that analyze the learning approaches among medical and allied health science students worldwide. A study conducted in Sri Lanka revealed that strategic approach was the predominant learning approach in all the three groups of preclinical, clinical, and postgraduate medical students.[16] Furthermore, a recently published study revealed that deep learning was adopted as a predominant learning approach among health science students in a medical college in Nepal.[1] Adoption of deep learning approach has a significant impact on academic success. Therefore, different measures should be initiated to encourage deep learning among students and aim for higher academic achievement.[19,20] In our study, male students appeared less likely to adopt the deep learning approach than female students. However, literature reveals that gender was not significantly associated with the predominant learning approach.[21,22]

Physiotherapists are integral members of the multidisciplinary health-care team. Physiotherapy education necessitates implementation of learning and teaching methods that aim at fostering skills, critical thinking process, synthesis, and making inferences. An investigation of the learning approaches is critical to prepare physiotherapy students to meet academic and clinical challenges. Identifying one's learning approach will benefit the student, academicians, health-care team, and ultimately the patient. Analysis of different learning approaches of students will help the academicians to offer a variety of teaching materials and resources that suit best which will help students achieve their educational objectives.[23]

Educators should strike a balance of teaching strategies and try to teach as per the students' preferred learning approaches, which will promote positive learning outcomes.[24] Furthermore, students should be encouraged to know their own learning styles and develop flexibility in this regard. It will aid to meet the demands of the challenging environment across the undergraduate physiotherapy curriculum.[25]

All learning style preferences cannot always be accommodated in the teaching–learning process. However, awareness about the same can help to enhance different educational methods.[9] Physiotherapy education requires acquisition of vast knowledge and skills which can be gained through varied learning practices using either preferred or nonpreferred learning approaches. Boosting nonpreferred learning styles helps individuals become amenable to various ways of learning and from various sources.[26]

A limitation of this study is the use of a self-administered questionnaire with predetermined choices to analyze learning approaches. Some factors that influence an individual learning approach may have been left out. Second, a qualitative method may assist in the exploration of all the aspects that may have an effect on learning approach that were overlooked in our study. Further studies to follow-up the cohort over a longer period could provide more information.

This aspect of learning approaches is less explored by academic researchers and hence can serve as a starting point for awareness among physiotherapy students. This will help them to reflect on adopting appropriate learning styles in different situations which will assist them in the learning process. Hence, medical educators should intervene and alter clinical teaching methods to optimize students' learning based on their preferred learning methods and encourage a shift toward deep learning. Differences in the learning approaches have important implications in the development of

effective medical curricula and deployment of new teaching-learning strategies in physiotherapy students.

## Financial support and sponsorship

Nil

## Conflicts of interest

There are no conflicts of interest.

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