

**[ORIGINAL ARTICLE]****Integrated Teaching in Physiotherapy on Spinal Cord Injury for Final year Undergraduate Students: 8 years longitudinal study.****Ganvir Suvarna<sup>1</sup>, Harishchandre Maheshwari<sup>2</sup>, Ganvir Shyam<sup>3</sup>, Bhagat Prachi<sup>4</sup>,**<sup>1</sup>Professor, <sup>2</sup>Associate Professor, <sup>3</sup>Principal, <sup>4</sup>Asst Professor, DVVPF's College of Physiotherapy, Ahilyanagar.**ABSTRACT :**

**Introduction:** For acquiring clinical skills of treating various aspects of disease based on strong foundation of knowledge of disease, Integrated teaching is the need of time. However, it cannot be one time experiment. For successful cultivation of expected clinical skills, it is imperative that a continuous effort is made for providing this integration on a regular basis. This report is based on the experiences of successful implementation of Integrated Teaching of 'Spinal Cord Injury Physiotherapy management' for final year UG students of Physiotherapy course.

**Methodology:** It is an 8-year study of implementation of Spinal cord Injury Management for final year students implemented since 2016 at our institute. After a preliminary FGD in 2016 about the content of module, a revision meeting is conducted every 2 years to review the content. Students and faculty feedback is obtained about the experience of being a part of this module is obtained every year. Post-test is conducted after every module to assess the knowledge and skill gained by participants.

**Results:** There is consistent positive feedback about the content of module from faculty and students since 2016 measured in terms of satisfaction index of equal to or more than 80 for each parameter of questionnaire. Parameters from student's questionnaire include knowledge and skill gain, interactivity, optimal balance between theory and practical and time management. From those of faculty include interdepartmental interaction, facilitation of requisite knowledge and skills, optimal challenge of implementation.

**Conclusion:** This Longitudinal study implementing Integrated Teaching in Physiotherapy provides strong evidence for incorporating this method of teaching learning in the curriculum.

**Key words:** *Integrated Teaching, Education, Physiotherapy, TL methods.*

**Introduction**

With the ultimate aim of acquiring clinical skills, health professions education has evolved significantly with the blend of cognitive and psychomotor skill training<sup>[1]</sup>. Integrated teaching is one such approach which primarily focuses on organization of interrelated subjects or topics which are taught in separate academic departments<sup>[2]</sup>. It can also be said to be the bridge between academic knowledge and clinical skills<sup>[1]</sup>.

Physiotherapy curriculum is taught in a traditional manner in India with subject specific approach and tight compartmentalisation of 4 system specific

conditions being taught in the final year undergraduate program. There is some overlap of conditions in these 4 subjects. There is a need to reduce this overlap and provide an opportunity to students to understand the specific condition in a better way to treat the patients with a human being approach not a system approach<sup>[3]</sup>.

In order to achieve this, Horizontal Integrated teaching was thought to be the best approach for final year students with the aim of providing composite information about a specific condition<sup>[4]</sup>. Spinal Cord Injury was chosen as a topic for this method as this condition involves various systems of the body and requires a team of specific system specialists to

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provide all round treatment.

The aim of this study was to develop and implement a module of Integrated teaching on SCI for final year students focusing on learning in an integrated manner from the experts in the field of SCI using multiple learning methodologies. It also aimed to assess the feasibility of its application for next batch of students also.

### Methodology

The study was carried out on 4th year Physiotherapy students. Approval from Institutional Ethics Committee was taken. 'Spinal Cord Injury' condition was chosen as the topic for integrated teaching as it involves multiple system affection. Faculty from 4 departments – Musculoskeletal Physiotherapy, Neurophysiotherapy, Cardiovascular and Respiratory Physiotherapy and Community Physiotherapy, involved in teaching final year students were invited to be the core committee members for drafting the module. A teacher from Neurophysiotherapy department was designated as Coordinator for this module.

To ensure complete coverage of the topic core committee members formulated a list of subtopics along with Specific Learning Objectives according to the speciality and shared with the group. Principal Investigator compiled the list and modified it optimally to avoid any repetition or omission of the required content. Once the finalised SLOs were approved by core committee, Power point presentations were prepared individually. To supplement these presentations, 3 case scenarios – Cervical, Thoracic and Lumbar level affection of SCI, chosen from already existing patient data were prepared for 3 phases of condition i.e Diagnosis, relevant clinical features, and Management in each of 3 cases. These case scenarios were presented to students in a stepwise manner during relevant didactic teachings.

Multiple Choice questions (MCQs) and Problem based Long Answer Questions based on the pattern of university exams were prepared for post-test. Feedback questionnaires were prepared for faculty and students.

After obtaining the institutional ethics committee approval, consent was obtained from students before the session of IT after giving a brief overview of the module and its implementation. Teachers other than core committee members involved in the actual teaching of this module were also briefed about actual implementation of the program. Detailed hour wise program of modules extending for 3 days was prepared by PI which was a blend of theory and practical skills to be learnt by students.

Implementation of the module started off with information about an SCI patient who was willing to share his success story with students personally in the classroom. It was then followed by didactic lectures and case scenario discussions. Afternoon session primary was reserved for Psychomotor skills related to assessment, Physiotherapy intervention in the form of mat activities and bedside exercises along with gait training or wheelchair-based exercises were demonstrated to students. They were also given an opportunity to practice skills on models and patients.

After the execution of 3 days of IT module, feedback from students and teachers was obtained. A sample test was scheduled for all students to understand the impact of teaching. Feedback was obtained from faculty and students who attended this program. The questionnaire consisted of 15 close ended questions and 2 open ended. Calculation of satisfaction Index (SI) was done for each question.

The module is in force since 2016 with a break in 2020 due to COVID 19 pandemic (conducted virtually) and continued till 2024 with few modifications as per the description below.

Year	Module	Test
2016 and 2017	Horizontal integrated teaching with 4 depts	Immediately after the module with MCQs
2018 and 2019	Horizontal integrated teaching with 4 depts	Test after 15 days to one month with MCQs and LAQs
2021 and 2022	Horizontal and vertical integrated teaching with 7 depts	Test after 15 days to one month with MCQs and LAQs
2022 and 2023	Horizontal and vertical integrated teaching with 7 depts	Test after 15 days to one month with MCQs and LAQs and practical examination

## Results

Analysis of the data obtained was done using descriptive statistics in the form of mean, standard deviation, range, frequency, and percentages. Feedback from Students and faculty was obtained through structured questionnaire with a combination of close ended and open-ended questions. Data of the year 2020 in which the module was administered in online mode is analysed separately and has not been included in this report. Final analysis was done using Satisfaction Index. The Satisfaction Index (SI) of each item of the questionnaire was calculated using the following formula(5):

$$S.I. = \frac{[(n1 \times 1) + (n2 \times 2) + (n3 \times 3) + (n4 \times 4)]}{(n1 + n2 + n3 + n4 + n5)} \times 100$$

Where n1 = Number of participants opted for Strongly disagree

n2 = Number of participants opted for Disagree

n4 = Number of participants opted for Agree

n5 = Number of participants opted for Strongly agree.

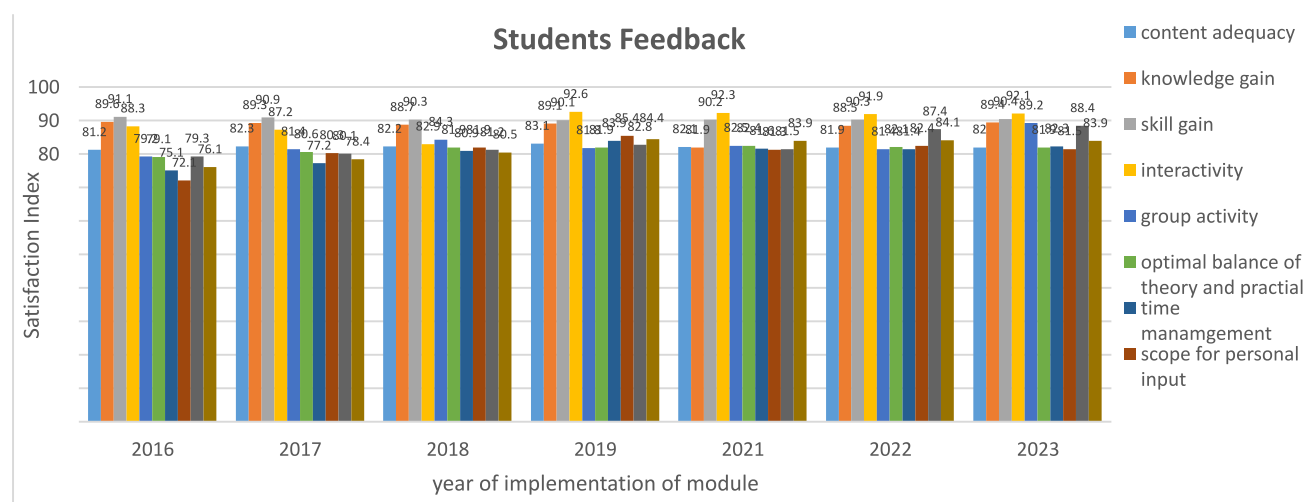
**Table 1 :** shows information about students participated in this module since 2016

Year	No of students	M/F
2016	29	20/9
2017	32	29/3
2018	28	24/4
2019	34	29/5
2021	36	31/5
2022	35	29/6
2023	34	29/5

## Feedback from Students

Student's feedback was obtained every year after the delivery of complete module on parameters of Content adequacy, acquisition of knowledge and skills, optimal theory lectures, optimal number of practical demonstrations, group activity utility, time management, scope for individual interactions, understanding of the concepts, achievements of objectives with addition of one or two parameters every year depending on the responses to open ended questions previous year.

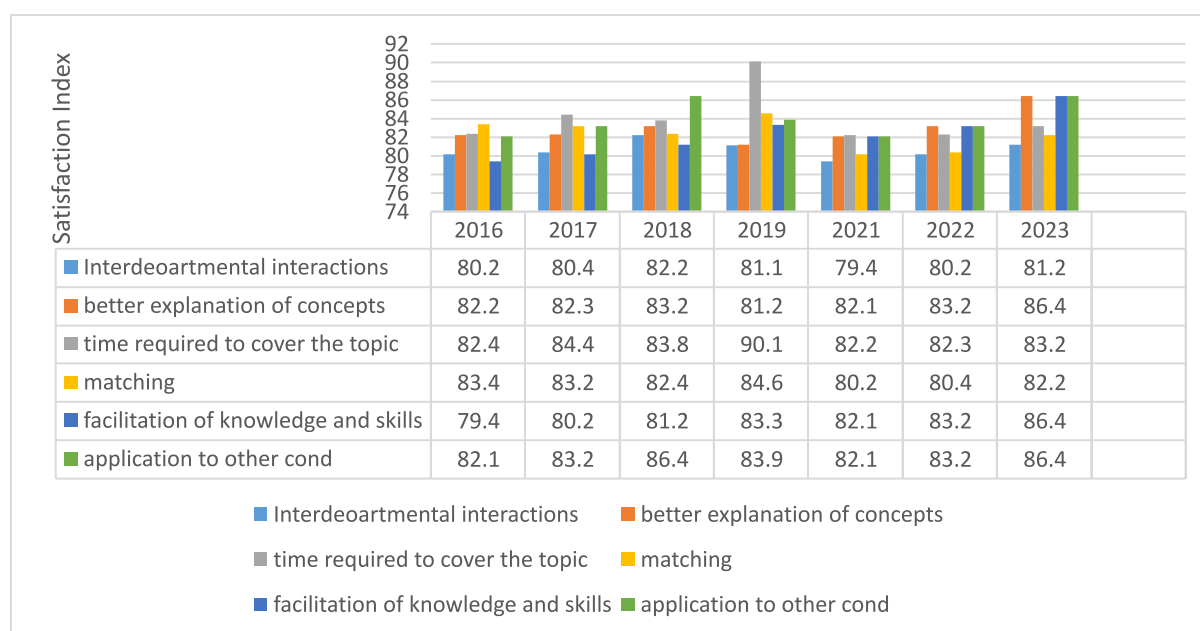
**Graph 1 :** Students feedback satisfaction index of each question



## Feedback from Faculty

Similarly, faculty feedback was obtained from teachers involved in the implementation of module. Parameters were Interdepartmental Interaction, ease of explaining the concept through this method, time management, topic coverage, tedious preparation

process, matching of objectives and the TL method, facilitation of knowledge and skill, Facilitation of application to other conditions.

**Graph 2 :** Teachers feedback satisfaction index.

### Post-test performance

Post-test consisted of 20 MCQs and 30 Marks LAQs and 50 Marks Simulated case was conducted. For first 2 years the exam was conducted immediately after the module was delivered with the intention that it will be easier for students to perform better if the test is scheduled immediately. However, with the feedback analysis, it was noticed that students wished to get some breathing time for study before appearing for exam. Hence it was taken after 15 days, the date of test being announce on the last day of module. Performance of students is found to be consistent overall years.

### Discussion

Harden's ladder has been found to be a useful tool in getting a better understanding of integration. Integrated teaching has advantages in terms of: Reduction in fragmentation of medical subjects; prevents redundancy; helps students to apply their knowledge to clinical practice; promotes interdepartmental collaboration; rationalizes use of available resources.<sup>[6]</sup>

Imparting the knowledge and skill related to a particular condition from different body system perspective may facilitate these advantages of helping students for application and emphasize interdepartmental collaboration useful in the students' future endeavours too.

In the current study student's satisfaction index was 80 on an average for all parameters. Primary aim of integration module was a to provide combined

subjects' knowledge and skill training to the students related to SCI an students had a satisfaction index of 82 on this parameter. Lokendra et al has reported that 94% students felt that this method helped them to retain the topic in a better way<sup>[7]</sup>. A study done by Mishra AK, has revealed that students had provided a mixed response to the parameter of time management on a scale of 1 to 5 where 1 was poor and 5 was excellent<sup>[8]</sup>. It is important that time management should be appropriate to keep the interest of students during the conduct of the whole module. In our study students have reported a satisfaction index to be more than 80 for time management.

In our study, group activity with case discussion on simulated cases was incorporated which received a satisfaction index of 81. Interactivity is the mainstay of teaching methods and provides a breathing time for students to process the information through peer learning<sup>[9]</sup>.

As per the study done to compare didactic and Integrated teaching method, students scored better in the test in the didactic group<sup>[10]</sup>, the rationale for choosing this method can be questioned. Better scores in didactic groups may be explained by the fact that more direct form of information is usually given in the classroom teaching. But in Integrated teaching, information is given through the application-based group activities and case scenarios. However, apart from scores obtained in the test, positive feedback from students and faculty provides a strong support for implementation of the method of integrated teaching.

Faculty perception revealed better interdepartmental interaction and reduced time required to teach the topic, matching objectives with the outcome in the present study. Faculty at our setup were motivated to learn about this concept and probably helped in the success of implementation of this module for all these years. Previous studies have suggested that the faculty interest was high and were of the opinion that this form of teaching is useful which is similar to our study. They also suggested developing modules for more conditions so that all aspects of a particular condition are informed to the students at the same time avoiding repetitions and omissions in certain cases<sup>[4,7,11]</sup>.

Responses to open ended questions by students suggested to include more radiological investigations, patient success story narrated by himself, more time for hands-on practice on patients, more time to practice administration of assessment scales on patients. Efforts will be made to incorporate these suggestions in next module implementation.

Responses to closed ended questions from faculty revealed that more support from the institute in form of preparation of patient related videos in the current OPD area to provide real life experiences to students, a session on telerehabilitation and the use of technology-based treatment should be included in the module. With the support from institute administration these suggestions will be incorporated in the next module.

There are few limitations of the study in implementation of modules such as provision of handouts or information notes that can be given to students so that they come prepared for the sessions. Also, more teachers can be deputed to monitor small group activity to guide the students in case of any query immediately.

### Conclusion

This form of teaching has been very well appreciated by students and teachers alike and have been found to be useful for students to understand the concept of Physiotherapy assessment and management for all aspects of SCI which is a multisystem affection. This form of teaching can be taken up for other conditions as well. This Longitudinal study provides strong evidence for incorporating this method of teaching-learning in the curriculum.

**Conflict of Interest:** There is no conflict of interest.

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