

**RECENT PHYSIOTHERAPY GRADUATES' PERSPECTIVES ON THE CURRICULUM  
CONTENT OF ELECTROTHERAPY AT THE UNDERGRADUATE LEVEL**

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**Abstract**

A branch of physiotherapy, electrotherapy is another one that is developing at a quick pace. The curriculum needs to be reviewed and updated often so that it can keep up with changes. There are many parts to the programme, and their timing and content can vary. This research set out to determine how graduate students felt about the electrotherapy programme in terms of its structure, methods of instruction, and opportunities for hands-on experience in the field. The present electrotherapy curriculum can be more thoroughly evaluated with the use of this data. Students who earned their Bachelor of Physical Therapy degrees between 2021 and 2023 were the subjects of a cross-sectional survey. Using a validated questionnaire, the data was gathered. Statistical analysis was carried out using Microsoft Excel after the data was collected and arranged. The findings showed that most people were interested in learning more about electrotherapy and various forms of electrodiagnosis. Nearly half of the students surveyed were unhappy with how well the material covered in the third and fourth years of the programme prepared them for clinical practice. The applicability of third-year course material to clinical practice was questioned by 20% of respondents. Basic topics covered in training for new practitioners were paraffin wax bath, ultrasound, cryotherapy, SWD, transcutaneous electrical nerve stimulation (TENS), hot packs, intermittent electrical stimulation (IFT), iontophoresis (NCS), electromyography (EMG), direct current (DC), and neurocardiography (NCS). Biofeedback and laser therapy were considered moderately important, while IR, UVR, and microcurrent were considered unimportant.

*Keywords: Electrotherapy, Physiotherapist, Curriculum, Education.*

**Introduction**

The curriculum is fundamental to education. The curriculum serves as a vehicle for conveying messages, imparting meanings, and instilling values (Jacob, 2010; Walker, 2002). Defining the curriculum poses challenges due to the subjective nature of individuals who include their own ideas into their definitions (Kelly, 2002). The curriculum is the breadth and depth of an academic programme or the course of study for a certain area of study (Tyler, 2013). Nevertheless, a curriculum encompasses more than just a syllabus. The interpretation of the professor and the surrounding circumstances have a significant impact on it (Johnson, 2006). Multiple elements exert effect on it, such as the educational setting, the schedule, interpersonal connections, and the societal backdrop (Squires, 1987; Schonert-Reichl et al., 2012). In addition to the material, the modern curriculum encompasses objectives and aims. Historically, there was a lack of explicit articulation on the objectives to be attained in the educational process (Ferris & Hedgcock, 2023). The act of specifying objectives has prompted teachers to contemplate their courses (Tyler, 2013).

It can be inferred that all the theoretical elements in the physiotherapy curriculum are intended to equip the graduate for professional practice (Jensen & Mostrom, 2012). Additionally, the design of this specific curriculum is influenced by various other elements, such as stakeholders include accrediting organisations, governing authorities, healthcare providers, students, and faculty (Buja, 2019; Jensen & Mostrom, 2012). This ensures its alignment with current standards of practice and the healthcare requirements of a given country. The course of study must conform to the established standard as determined by the professional governing bodies in the country. As a result of the differences between privately owned and government-run institutions and the absence of uniform regulating authorities for Physiotherapists, there is a lack of a standardised curriculum or course (Lal, 2018). Electrotherapy is a constituent of physiotherapy treatment procedures. Electrophysical agents play a significant part in

physiotherapy practice (Watson, 2000). The current notions guiding their use differ greatly from those used in the past. The utilisation of EPA has played a significant role throughout the history of physiotherapy practice (Watson, 2000; Schreiber & Stern, 2005; Nicholis, 2007).

Physiotherapy students receive instruction in electrotherapy, with foundational concepts addressed in undergraduate courses and more advanced topics explored in postgraduate programmes (Chipchase et al., 2007). The topics have undergone changes over time in accordance with progress in the area. Regular evaluation and updating of curricular content in this area is crucial. The course content may play a crucial role in assessing the clinical skills of a graduate (Gouden, 2005; Harden & Laidlaw, 2020).

Up to 61% of a patient's clinical time is devoted to electrotherapy treatment, according to Dennis (1987). For a long time, electrophysical agents (EPAs) have been a part of treatment plans. The high rates of use of short-wave diathermy (SWD) and ultrasound (US) in the mid-1980s suggest that these techniques were the gold standard for treatment (Dennis, 1987). The three most often used electrotherapy physical agents (EPAs) in Australia after three years were interferential current (IFT), ultrasound (US) and TENS (Lindsay et al., 1990). Conversely, the usage and ownership rates for more conventional agents including ultraviolet (UV), infra-red radiation (IR) and wax baths were revealed to be lower (Lindsay et al., 1990). In the late 1990s, hot packs, transcutaneous electrical nerve stimulation (TENS), and IFT continued to be commonly employed in the US. However, although being available, shortwave diathermy (SWD) was utilised by only a small number of faculties (Robertson & Spurr, 1998; Shields et al., 2002). By the early 2000s, both IR (Infrared Radiation) and SWD (Shortwave Diathermy) were considered insignificant in the field of physiotherapy practice (Gazetas, 1992; Chipchase & Trinkle, 2003).

In the contemporary setting, the application of Electrotherapy encompasses a wide range of assessment and treatment techniques. The therapy strategy may differ across therapists based on their familiarity with different EPA ideas and current trends (Watson, 2000; Robinson, 2008).

Physiotherapy graduates have supervised training in clinical settings as part of their undergraduate study. Supervision is provided by both instructors and seasoned professionals operating within a certain department. However, new graduates may not always have access to supervision and guidance from more experienced colleagues. Consequently, the recent graduate must depend on the knowledge obtained throughout their undergraduate studies. Given this additional obligation, it is necessary for undergraduate training to meet a suitable quality (Watson, 2000; Kelly, 2009). An effective method for evaluating the quality of undergraduate education involves assessing the content of the programme. Subsequently, it is feasible to assess the relevance, appropriateness, and effectiveness of the curriculum in effectively preparing students for the professional environment. Students are the most suitable choice because they are currently engaged in the course. Nevertheless, they have a deficiency in clinical expertise. Thus, recent graduates may serve as a viable option due to their recent exposure to the undergraduate programme and their present clinical responsibilities (Rolfe, 2000).

The physiotherapy curriculum is influenced by both the micro and macro environment. Society, healthcare systems, educational institutions, and physiotherapy-related information are all part of the larger macroenvironment. Hence, the physiotherapy curriculum may require modification to accommodate an epidemic, such as the one mentioned. One must confront the HIV epidemic in this nation. Considering the disease's influence on the country's population, it is necessary to revise our curriculum to ensure that students have a heightened understanding and awareness of the resultant societal impact and their responsibility in addressing the emerging requirements. The physiotherapy graduate must possess a heightened awareness and promptness in addressing this societal requirement (Kurunsaari et al., 2018).

The micro environment encompasses the educational institution and clinical practice environments. The learning process is also influenced by this environment. Goals should be set in a manner that is both achievable and attractive, ensuring they are grounded in reality (Jensen & Mostrom, 2012). The content needs to cover a lot of ground, including both general knowledge and specifics with real-world applications. Fundamental data shouldn't be set in stone but should instead undergo regular updates to

reflect the dynamic nature of healthcare and healthcare education on a global scale (Bandaranayake, 2000).

Curriculum assessment studies encompass different types of information, one of which is referred to as 'supplemental information'(Medina, 2018). This encompasses the subjective ideas and perspectives of individuals regarding the programme. The potential participants in this examination may include department heads, lecturers, senior doctors, fresh graduates, students, and patients. This study included the perspectives of graduate students who were either working for themselves or working under the supervision of experienced physiotherapists (Lakkas et al., 2007) Additional information is quite valuable in the assessment process. One can ascertain the presence of a difference between lecturers' perceptions and the real occurrences. One can ascertain the necessary supplementary facts to understand the reasons behind students' perspectives. Furthermore, it is possible to evaluate the feedback provided by students regarding the pertinence of the content. To make sure the included content is appropriate for clinical practice with Indian people, this can help with change recommendations. The physiotherapy department's curricula will also benefit from its incorporation (Sugand et al., 2010). Therefore, the purpose of this research was to find out whether the physiotherapy students and graduates of the EPA undergraduate programme consider the course material, pedagogy, and clinical experience to be adequate and relevant for their careers.

### Objective of the study

To evaluate the opinions of recent physiotherapy graduates regarding the curriculum material of electrotherapy at the undergraduate level, namely the quality of the electrotherapy curriculum content, the appropriateness of teaching methods, and the adequacy of clinical practice.

### Research Methodology

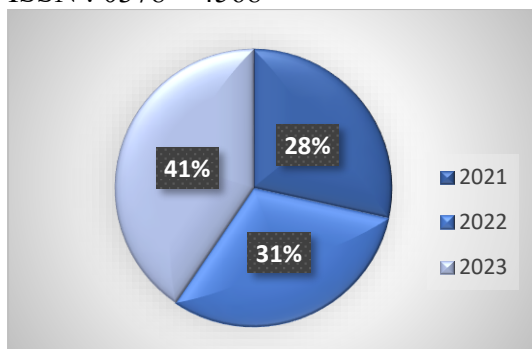
A “cross-sectional” survey was conducted among graduates (BPT) who successfully finished their studies between the timeframe of 2021 to 2023. A three-month survey was conducted using structured questionnaire to collect data from a sample group of 200 graduates. The validation process of the questionnaire took place at the School of Physiotherapy of the institute. The aim was to gather data from the students' perspectives rather than relying on biased information from experienced physiotherapists. The aims of the research were communicated to all through an information letter, and their participation in the study was contingent upon obtaining written consent. The study excluded those who graduated prior to 2021, as well as those who declined to participate. Statistical analysis was carried out using Microsoft Excel after data was organised and collected. The methodology was approved by the ethics council of the institute.

### Results

A total of 200 surveys were completed. The study's findings are analysed in relation to demographic information, the content of the curriculum, the curriculum focused on clinical aspects, and overall teaching techniques. In 2021, a total of 57 therapists graduated. This number increased to 62 in 2022 and further rose to 81 in 2023. These therapists were either engaged in further academic pursuits, such as pursuing their master's programme, or employed in private clinics.

**Table 1 Graduation year of Therapist**

Graduation Year of Therapists	Frequency	Percentage
2021	57	28%
2022	62	31%
2023	81	41%

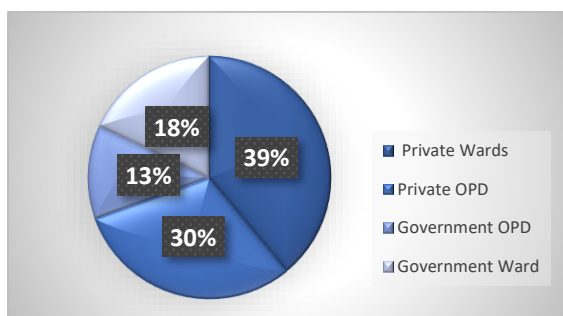


**Figure 1** Graduation year detail of Therapist

**The demographics results:** There are 78 individuals who work in Private wards, and 61 individuals who work in Private OPD. 25 respondents work in a Government Outpatient Department (OPD) and 36 respondent works in a government ward.

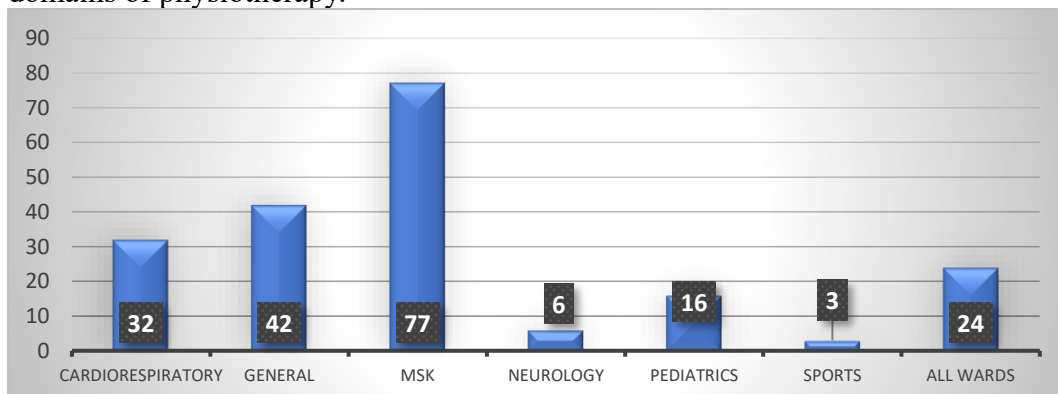
**Table 2** Wok Setting

- Work Setting	F	%
Private Wards	78	39
Private OPD	61	30
Government OPD	25	13
Government Ward	36	18



**Figure 2** Work setting

The majority of responders (77) were employed in the MSK region, while 24 worked in all wards and 32 worked in the cardiorespiratory department. The majority of therapists were engaged in providing musculoskeletal physiotherapy services. Figure 3 depicts the allocation of therapists across different domains of physiotherapy.



**Figure 3** Area of Work

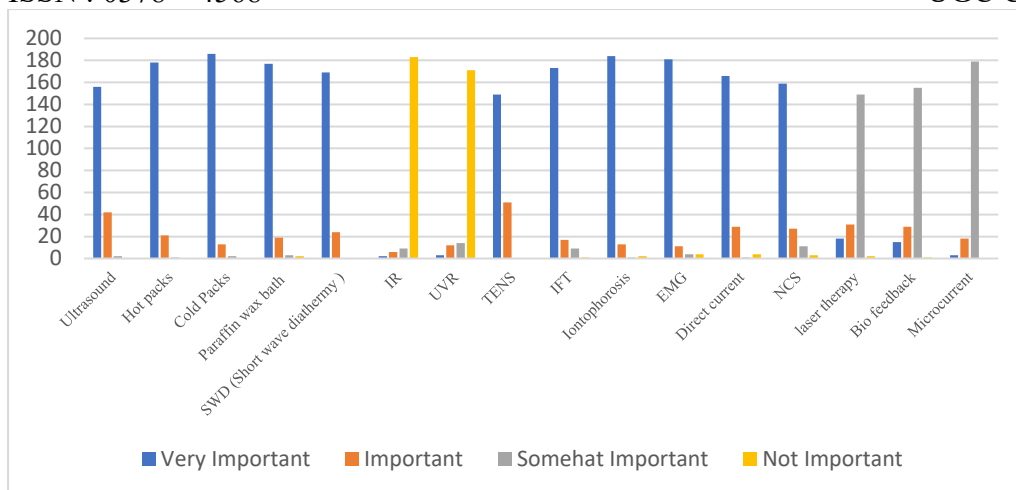
Ninety-four percent of therapists hold the belief that Electrotherapy should exclusively be delivered by Physiotherapists. 6% of therapists held the belief that Electrotherapy can be administered by specialists other than themselves. Ninety-two percent of therapists believe that Electrotherapy should be incorporated into the curriculum of the first year of the BPT programme. 08% of therapists believed

that it would be more favourably received during the second year of studying Physiotherapy. 42% of respondents concurred that the curriculum for the third and fourth year of the Bachelor of Physiotherapy programme is pertinent in terms of its electrotherapy content. 47% of therapists expressed disagreement, while 11% stayed neutral regarding this question.

**Table 3 Opinion on inclusion of Electrotherapy**

<b>Electrotherapy should primarily be administered by</b>	
Physiotherapists	94%
Other Professionals	6%
<b>Introduction of Electrotherapy in BPT Programme</b>	
- 1st year	92%
- 2nd year	08%
<b>Relevance of 3rd and 4th year BPT curriculum to Electrotherapy</b>	
- Agree	42%
- Disagree	47%
- Neutral	11%
<b>Desire for Inclusion in 4th year BPT Curriculum</b>	
- Electrodiagnosis, calibrations, use of newer equipment	94%
- Assessment and treatment techniques	97%
- Introduction of new EPAs for clinical use	90%
<b>Adequacy of 3rd and 4th year curriculum for clinical practice</b>	
- Agree	41%
- Disagree	46%
- Neutral	13%

Therapists have stated their desire to include Electrodiagnosis, calibration of Electrophysical agents, and the use of advanced equipment in clinics as part of the 4th year curriculum for BPT. Out of the participants, 94% indicated that they believed it would have been possible to include evaluation and therapy procedures in the fourth year. In addition, 90% of the participants expressed the belief that specific new EPA could have been implemented in the fourth year to be practically applied in a clinical environment. When asked about the sufficiency of electrical therapy in the third- and fourth-year curricula for clinical practice, 46% disagreed, 41% agreed, and 13% remained neutral. The majority of participants expressed that Hot packs (HP), Ultrasound (US), Cold packs, PWB, SWD, TENS, Direct current, IFT, Iontophoresis, NCS and EMG were highly significant subjects covered in the initial training for novice practitioners. Topics such as IR, UVR, and microcurrent were deemed unimportant, whereas biofeedback and laser therapy were considered moderately significant. The results are depicted in Figure 4.



**Figure 4 important topics in entry level training for beginning level practice**

**EPA Application:** ultrasound, cold packs, hot packs, wax, TENS, IFT, and DC are commonly found in most workplaces and frequently utilised. Methods such as IR, UVR, Static magnets, Microcurrent, NCS, Laser, and EMG are not commonly seen or utilised in most workplaces.

**Table 4EPA availability & Usage**

Availability and Usage	
Mostly	Hot packs
	Ultrasound
	Cold Packs
	Paraffin wax bath
	SWD (Short wave diathermy)
	Direct current
Hardly	UVR
	TENS
	IFT
	Iontophoresis
	EMG
	IR
	NCS

**The curriculum Material:** The majority of respondents (184) believed that EPA should be implemented in the first year. Sixteen participants expressed the opinion that the Environmental Protection Agency (EPA) should be incorporated into the curriculum during the second year of undergraduate education. A majority of the participants (186) expressed the opinion that guidance on evaluation and therapy techniques could possibly have been encompassed in the fourth-year syllabus as well. 188 respondents expressed the opinion that certain new EPA equipment may have been implemented during the fourth year as well.

**Table 5 Analysis on perception of curriculum material**

<b>Curriculum Material</b>	
<i>EPA should be introduced in Curriculum Content</i>	
1st year	184
2nd year	16
<i>Opinion on Assessment and treatment techniques education in 4th year</i>	
Yes	186
No	14
<i>Introduction of new EPA equipment in 4th year</i>	
Yes	188
No	12
<i>Relevance of Concepts of EMG, NCS and SDC in 3rd year to clinical practice</i>	
Relevant	48
Somewhat Relevant	132
Irrelevant	20
<i>Opinion on Aspects Lacking in Curriculum</i>	
Important aspects lacking	128
Not important	72

The third-year material on EMG, NCS and SDC, was not often relevant to clinical practice in the fourth-year material, according to 132 participants. Out of these, 48 considered it to be relevant, while 20 considered it to be irrelevant. 128 of them believe that in curriculum, crucial parts were lacking.

**Teaching Approaches:** Out of the 150 respondents, a majority of them (138) found collaborating with their peers to be highly beneficial. Additionally, 59 respondents also reported finding this approach helpful, while only 3 respondents did not find it helpful. 97 individuals thought supervision to be highly beneficial, while 89 individuals found it to be beneficial. A total of 151 respondents reported that patient presentation was highly beneficial, while 44 respondents found it to be beneficial, and only 5 respondents did not find it to be useful. A total of 149 respondents reported that working with older students was beneficial, while 39 respondents specifically found it helpful. On the other hand, 12 respondents did not find it helpful. In regards to discussing patients with lecturers, 159 respondents felt it to be helpful, with an additional 41 respondents expressing the same sentiment.

A total of 163 participants reported that interactive learning methods, such as tutorials, were highly effective, whereas 33 participants found them effective on occasion. A total of 183 respondents reported that practical sessions were highly beneficial, while 17 respondents indicated that they were occasionally effective. Out of the 50 respondents, all of them found the workshops to be highly effective. On the other hand, 83 respondents found the workshops to be effective at times. Additionally, 79 respondents found lectures to be highly effective. Out of the participants, 68 individuals reported that they found the treatment to be useful on certain occasions, whereas 53 individuals reported that they found it to be unsuccessful.

The majority of responders (189) strongly concur that Electrotherapy is a crucial instrument in the realm of Physiotherapy rehabilitation.

**Table 6 Analysis of perception on teaching methods**

<b>Teaching Methods</b>	<b>Extremely beneficial</b>	<b>Beneficial</b>	<b>Unhelpful</b>
Collaborating with peers	138	59	3
Supervision	97	89	14
Patient presentation	151	44	5
Working with senior students	149	39	12
Discussing patients with lecturers	159	41	0
	<b>effective</b>	<b>sometimes effective</b>	<b>In effective</b>
Interactive learning (tutorials)	163	33	4
Practical sessions	183	17	0
Workshops	50	83	63
Lectures	79	68	53
	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>disagree</b>
When it comes to physical therapy and rehabilitation, electrotherapy is a crucial instrument.	189	11	0

### Conclusion

This study investigates the viewpoints of recent graduates on their views on electrotherapy and the utilisation of EPAs in clinical practice. Given their prior knowledge, the majority of graduate physiotherapists regarded the electrotherapy material covered in their undergraduate curriculum to be sufficient. However, they deemed it irrelevant to the implementation of EPAs in their clinical work. The participants expressed the belief that the curriculum may be enhanced by placing greater focus on clinical reasoning and the application of treatment methods to real-life clinical scenarios. Being exposed to research in electrotherapy, particularly, would also make the application of EPA pertinent in the therapeutic environment. Active pedagogical approaches were favoured above passive instructional methods. Graduates exhibited a greater preference for tutorials and practical sessions in comparison to lectures and workshops. Regarding clinical learning, participants expressed the necessity for the enhancement of clinical reasoning abilities. The process of being supervised, presenting patients, and engaging in case discussions with experienced physiotherapists was deemed highly beneficial. Respondents expressed that topics such as IR and UVR were deemed unimportant and advocated for their removal from the curriculum due to their perceived lack of relevance in clinical practice. The majority of participants expressed dissent on the relevance of the topics in clinical experience during the third and fourth years of education. The participants expressed the opinion that certain concepts from the third year, such as EMG and NCS, may have been integrated into fourth year clinical practice. Further investigation could be conducted to compare the EPA curricula implemented at different physiotherapy institutes nationwide. This may provide more insights into the issues that are pertinent to undergraduate EPA studies. It is advisable to conduct a comparable study subsequent to modifications in the EPA curriculum to assess whether there has been a general enhancement.

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