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Research Article

CAREER INTENTIONS AND CLINICAL EXPOSURE IN AMPUTEE REHABILITATION AND PROSTHETICS AND ORTHOTICS AMONG TURKISH PHYSIOTHERAPY STUDENTS

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Keywords

Amputees,
Physical therapy Education,
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ABSTRACT

Purpose: This study aimed to assess the career preferences and self-perceived competence of fourth-year physiotherapy students in Türkiye regarding amputee rehabilitation and prosthetics/orthotics.
Methods: A cross-sectional survey was conducted among 220 fourth-year physiotherapy students from seven universities in Türkiye. The survey evaluated students' interest in pursuing careers in amputee rehabilitation and prosthetics/orthotics, their clinical exposure to amputee patients, and their self-perceived competence in these specialized fields.
Results: Over 50% of the surveyed students expressed no intention to work in amputee rehabilitation or prosthetics/orthotics after graduation. Most students reported observing fewer than three amputee patients during their education, indicating limited clinical exposure. Despite increased interest following the 2023 earthquake in Türkiye, 81.8% of students felt incompetent to participate in post-earthquake amputee rehabilitation.
Conclusion: The findings indicate insufficient clinical exposure in these fields, which may contribute to low perceived competence and limited career intentions. These findings emphasize the need for curriculum reforms and strategies to increase structured clinical exposure, such as systematic placements and collaborations with prosthetics and orthotics clinics, to enhance students' competence and confidence in amputee care and rehabilitation.

INTRODUCTION

Amputation is an irreversible major surgical procedure that affects not only the physical functioning of an individual but also deeply impacts psychological integrity, social roles, and quality of life (1, 2). In Türkiye and worldwide, the major causes of amputation are diabetes, peripheral vascular disease, cancer, and traumatic events (3, 4). In addition to these chronic conditions, increasing geopolitical instability and conflicts, and recent natural disasters have turned amputations into a global health crisis (5, 6). On February 6, 2023, a major earthquake affected the eastern and southeastern parts of Türkiye, resulting in approximately 120,000 people injured (7). According to early reports in March 2023, 850 people underwent amputation due to trauma resulting from the earthquake, and this number is expected to increase (7). This disaster has tragically highlighted the great need for competent healthcare professionals in the field of prosthetics and orthotics, and amputees to manage complicated limb loss and rehabilitation processes.

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Care for amputees does not end with the surgical procedure; rather, it requires a complex and multidisciplinary rehabilitation process (8). This process starts with preoperative care and extends to lifelong psychosocial support, including prosthetics and rehabilitation (8). Physiotherapists are the core element of this multidisciplinary team and play a key role in increasing the functional independence of individuals and supporting their reintegration into society (9). The role of physiotherapists extends beyond prescribing exercises and includes adaptation to prosthetics and coping with challenges in daily life (10).

To achieve this qualification in the amputee care and prosthetics orthotics field, structured education is required to equip professionals with a fundamental understanding of these patients. Accordingly, the Physiotherapy and Rehabilitation National Core Training Program (FTR-UÇEP 2025) in Türkiye requires graduates to master the fundamental principles of postamputation rehabilitation as an educational standard (11). However, the extent to which this theoretical standard is met in practice remains a critical question. International literature demonstrates that when theoretical training in a specific field is not supported by adequate clinical exposure, students' self-confidence and professional preparation levels decline significantly (12, 13).

Therefore, the main purpose of this study was to scientifically examine the extent to which fourth-year students studying in the Physiotherapy and Rehabilitation Departments of universities in Türkiye consider pursuing amputee rehabilitation and orthosis/prosthesis applications in their post-graduation career planning and the factors affecting these tendencies.

METHODS

This descriptive, cross-sectional study investigated pre-graduate tendencies of physiotherapy and rehabilitation department bachelor’s degree students toward working in the field of prosthetics and orthotics application and amputee rehabilitation.

This study was approved by the Trakya University Faculty of Medicine Non-Interventional Scientific Research Ethics Committee (TÜTF-GOBAEK 2025/428). The survey included a digital "Informed Consent Form" that detailed the study's purpose, procedures, data confidentiality, and anonymity. Participants accessed the survey questions after digitally approving the consent form.

Participants

Participants were 4th-grade physiotherapy and rehabilitation department students in the 2025-2026 academic year who volunteered to participate in the study and had adequate

proficiency in Turkish to understand and reply to the survey questions. Participants were invited via online methods, such as bulletin boards, social media, and class groups. Two hundred and twenty students who were over 18 years of age, actively pursuing undergraduate education, and who provided informed consent participated in the study.

Assessment

Data were collected using an online questionnaire developed by the researchers for purposes of this study. The online questionnaire consisted of questions regarding demographic information, including age, gender, and university, and questions aimed at assessing the tendency to work in the prosthetics and orthotics field post-graduation, opportunity to observe amputee rehabilitation or prosthetics and orthotics applications in clinical practice, effects of earthquakes on intention and competency perception, and intention of voluntary clinical internship in prosthetics and orthotics application center (Appendix 1).

Statistical Analysis

The sample selection was conducted using the convenience sampling method. The sample size was determined based on the number of voluntary participants reached during the study period, with the aim of maximizing the sample to ensure adequate representation of the target population. Statistical analyses were performed using SPSS v25.0 (IBM Corp.). Descriptive statistics were presented as mean ± standard deviation, and categorical results were presented as numbers (n) and percentages (%).

RESULT

The demographic characteristics, career orientations, clinical experiences, and self-efficacy perceptions of the 220 students from seven universities across four different geographical regions of Türkiye are summarized below. The participating institutions included Trakya and Kırklareli Universities (Marmara Region), Aydın Adnan Menderes and Muğla Sıtkı Koçman Universities (Aegean Region), Kırıkkale and Sivas Cumhuriyet Universities (Central Anatolia Region), and Bolu Abant İzzet Baysal University (Black Sea Region). The mean age of the participants was 21.86±1.36, and 77.7% (n=171) were female and 22.3% (n=49) were male.

When students' post-graduation career plans were examined, it was observed that the field of prosthetics and orthotics and amputee rehabilitation was not a popular choice among

physiotherapy students (Table 1). More than 50% of the participants did not intend to pursue prosthetics and orthotics applications and amputee rehabilitation after graduation.

The clinical practice experience of students in the field of prosthetics and orthotics applications and amputee rehabilitation was found to be very limited. Moreover, more than 50% of the participants did not encounter amputee patients or prosthetics and orthotics application during education, and 65% of them did not observe the rehabilitation process of an amputee in clinical practice. In the clinical setting, less than 10% of participants had the opportunity to observe the amputee rehabilitation process of more than three patients, and less than 15% had the opportunity to observe prosthetics and orthotics applications on more than three patients in clinical practice. Only one participant performed a voluntary clinical internship at a prosthetics and orthotics application center, and almost 80% of the participants were indecisive or did not consider doing a clinical internship at a prosthetics and orthotics application center. Approximately 30% of the participants had attended a seminar, congress, or course on prosthetics and orthotics applications topic before (Table 1).

One of the most striking findings of this study is the paradox between increased interest and lower self-efficacy perceptions following the earthquake (Table 1). Forty percent of the participants stated that the earthquake positively impacted their interest in this field. However, this increased motivation was not reflected in their professional self-confidence levels. The overwhelming majority of participants (81.8%) believed that they lacked the competence to function effectively in this field.

Table 1. Post-Graduation Career Intentions and Clinical Education Experiences

	Yes n (%)	**No n (%)**	**Indecisive n (%)**
Are you considering pursuing amputee rehabilitation after graduation?	10 (4.5%)	120 (54.5%)	90 (40.9%)
Are you considering pursuing a career in prosthetics and orthotics applications after graduation?	15 (6.8%)	118 (53.6%)	87 (39.5%)
Have you encountered any amputee patients in your immediate circle?	96 (43.8%)	123 (56.2%)	-
Did you have the opportunity to observe and apply amputee rehabilitation practices during your training?	76 (34.5%)	144 (65.5%)	-
Did you have the opportunity to observe/practice prosthetic/orthotic rehabilitation practices during your training?	103 (46.8%)	117 (53.2%)	-
Have you ever volunteered for an internship at a prosthetic/orthotic application center?	1 (0.5%)	219 (99.5%)	-
Are you considering a volunteer internship at a prosthetic/orthotic application center?	47 (21.4%)	76 (34.5%)	97 (44.1%)
Do you feel competent to take part in post-earthquake amputee rehabilitation?	40 (18.2%)	180 (81.8%)	
	Did not changed	**Changed positively**	**Changed negatively**
Has your preference for amputee rehabilitation changed after the earthquake?	131 (59.5%)	88 (40%)	1 (0.5%)

	0-3 Patient, n (%)	**3-6 Patient, n (%)**	**6-10 Patient, n (%)**	**10+ Patient, n (%)**
How many patients did you have the opportunity to observe/apply amputee rehabilitation practices during your training?	205 (93.6%)	10 (4.6%)	2 (0.9%)	2 (0.9%)
During your training, how many patients did you have the opportunity to observe/apply prosthetic/orthotic rehabilitation practices?	191 (87.2%)	16 (7.3%)	10 (4.6%)	2 (0.9%)
	Seminar, n (%)	**Course, n (%)**	**Congress, n (%)**	**Other, n (%)**
Have you ever participated in any prosthetic/orthotic-related activities?	52 (24.0%)	2 (0.9%)	11 (5.1%)	152 (70.0%)

DISCUSSION

The study's findings indicate that, despite the increasing need, candidate physiotherapists have a low interest in working in the field of prosthetics and orthotics application or amputee rehabilitation. The limitations of students' observation/practice opportunities within the scope of clinical practice in the field of prosthetics and orthotics application or amputee rehabilitation seem to be the reason for the disconnection between the specialized manpower required in the field of amputee rehabilitation and students' interest in working in the field.

Our findings show that only 4.5% of students had a clear intention to work in the field of amputee rehabilitation, compared to 54.5% showing no interest and 40.9% being indecisive. Similarly, only 6.8% of students had a clear intention to work in prosthetics and orthotics,

compared to 53.6% showing no interest and 39.5% being indecisive. These findings are in line with previous literature, which indicates that the majority of physiotherapy students have a tendency to work in the more popular fields like musculoskeletal rehabilitation or sports physiotherapy rather than more specialized fields like pediatrics, geriatrics, or prosthetics/orthotics (14). This reluctance to enter the prosthetics and orthotics field is not unique to Türkiye, previous studies similarly noted that physiotherapy students globally prefer more popular fields like musculoskeletal or sports rehabilitation instead of prosthetics and orthotics as a 'niche' specialization requiring distinct technical skills that differ from the manual therapy-focused curriculum they are comfortable with (15, 16). Additionally, the career intention tendencies of physiotherapy are mostly determined by the most encountered subjects during undergraduate education and clinical practice (17, 18). The field of prosthetics and orthotics might be perceived by students as uninviting due to its complicated biomechanical nature and need for following advanced technology related to the field, combined with inadequate educational and clinical background. Therefore, students' lack of interest in this field may be a reflection of the opportunities they have in educational curriculum and clinical practice and present it as an attractive career path, rather than a personal preference.

Results of this study showed that after the earthquake centered in Kahramanmaraş, Türkiye in February 2023, 40% of the students changed their preference to work in the field positively indicating a formation of awareness and sense of social responsibility. However, a great majority of students (81.8%) did not feel competent to take part in post-earthquake amputee rehabilitation, which further indicates that this motivational change does not translate into a perception of competence. The disparity between high motivation and low self-efficacy following the earthquake highlights a critical gap in disaster preparedness within the current curriculum. This aligns with broader literature on healthcare students' disaster readiness; for instance (19, 20), emphasized that while students often feel a moral duty to help during disasters, they lack the technical confidence to do so. This might be due to the fact that almost 9 out of 10 student cannot gain sufficient clinical experience by seeing only 0-3 patients during their education. Since self-efficacy perception is an essential part of career exploration and decision-making (21), it is not surprising that students with low competency due to inadequate clinical experience do not intend to work in the field of amputee rehabilitation or prosthetics and orthotics.

Although the Physiotherapy and Rehabilitation National Core Training Program (FTR-UÇEP 2025) presents the competencies in the field that graduates should have as a framework (11), our study demonstrates that these competencies remain on paper and there are serious gaps

in their transfer to real clinical practice. Considering the increasing need in the field of amputee rehabilitation and prosthetics and orthotics (22), this situation emphasizes the need to take concrete steps to solve the gap between the theoretical framework and education process.

The lack of voluntary internships observed in our sample is particularly concerning when viewed through the lens of 'situated learning theory,' which suggests that professional identity is formed through participation in real-world communities of practice (23). Without the 'legitimate peripheral participation' that occurs during a prosthetics and orthotics internship, students cannot visualize themselves in this role. Our results reinforce the argument that observation alone is insufficient; active participation in prosthetics and orthotics clinics is required to transform theoretical knowledge into professional confidence.

Limitations of the Study

This study has limitations regarding the generalizability of its results to all physiotherapy students in Türkiye due to the sample used. Future research should focus on qualitative research methods, such as interviews and focus groups, to understand the in-depth reasons behind students' avoidance of this field. Additionally, multicenter studies comparing the competency levels and career choices of students at universities implementing different curricular models (e.g., with and without mandatory prosthetics and orthotics internships) would provide compelling evidence to assess the effectiveness of curricular reforms.

CONCLUSION

This study has shown that physiotherapy students in Türkiye have low career interest in the field of amputee rehabilitation and prosthetics and orthotics, and that their clinical experience and exposure opportunities are quite limited. A potential reason for this low career interest is largely attributed to a low sense of self-efficacy due to insufficient clinical experience. Despite the positive changes in students' attitudes toward the field, particularly after the 2023 earthquake, this low sense of competence highlights the need to restructure undergraduate physiotherapy programs, particularly their clinical training components, in an evidence-based and needs-focused manner to cultivate a qualified workforce capable of meeting Türkiye's growing rehabilitation needs in the field.

Ethics Committee Approval: Non-Interventional Scientific Research Ethics Committee of Trakya University (TÜTF-GOBAEK 2025/428).

Informed Consent: Informed consent was obtained from all patients for being included in the study.

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