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Effect of interactive wearable sensor technology training in physiotherapy students

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ÖZET

Objective: Wearable sensor technology offers significant potential in physiotherapy and rehabilitation by providing new ways to monitor patient progress and assess interventions. Despite this, its integration into physiotherapy education is still emerging. This study evaluates the impact of interactive sensor training on the knowledge level of wearable sensor technology among physiotherapy students. **Method:** A total of 111 physiotherapy students from Fenerbahçe University's Faculty of Health Sciences participated in this study. The training involved hands-on sessions with Euleria Health's Riablo and XClinic products. The training session, focused on wearable motion sensors using Euleria Health's Riablo and XClinic products, was conducted to enhance students' understanding. Knowledge levels were assessed before and after the training using a specially designed 20-item Likert-type questionnaire. **Results:** Paired-samples t-tests and Pearson correlation analyses were conducted to evaluate the data. The results showed a significant increase in knowledge scores post-training, rising from 66.00±17.58 to 77.65±22.06 (p<0.001). Pearson correlation analysis indicated a positive relationship between students' CGPA (Cumulative Grade Point Average) and their pre- and post-training knowledge scores, with correlations of r=0.230 (p=0.018) and r=0.275 (p=0.005), respectively. **Conclusion:** The findings indicate that direct, interactive sensor training substantially improves physiotherapy students' understanding of wearable sensor technology. The observed positive correlation between academic performance and knowledge gains suggests that students with higher academic achievements may derive greater benefits from this training. Integrating such practical sessions into educational programs is essential for equipping future professionals with the skills needed to effectively implement emerging technologies in clinical practice.

Keywords: Wearable electronic devices, physiotherapy, students, education

Etkileşimli giyilebilir sensör teknolojisi eğitiminin fizyoterapi öğrencilerindeki etkisi

Amaç: Giyilebilir sensör teknolojisi, fizyoterapi ve rehabilitasyonda hasta ilerlemesini izlemek ve müdahaleleri değerlendirmek için önemli bir potansiyel sunmaktadır. Buna rağmen, bu teknolojinin fizyoterapi eğitimine entegrasyonu hala gelişim aşamasındadır. Bu çalışma, etkileşimli sensör eğitiminin fizyoterapi öğrencilerinin giyilebilir sensör teknolojisi konusundaki bilgi düzeyine etkisini değerlendirmektedir. **Yöntem:** Fenerbahçe Üniversitesi Sağlık Bilimleri Fakültesinden toplam 111 fizyoterapi öğrencisi bu çalışmaya katılmıştır. Eğitim, Euleria Health'in Riablo ve XClinic ürünlerini içeren uygulamalı oturumlarla gerçekleştirilmiştir. Bilgi düzeyleri, özel olarak tasarlanmış 20 maddelik Likert tipi bir anket kullanılarak eğitim öncesinde ve sonrasında değerlendirilmiştir. **Bulgular:** Verilerin değerlendirilmesi için eşleştirilmiş örneklemler t-testi ve Pearson korelasyon analizi yapılmıştır. Sonuçlar, eğitim sonrası bilgi skorlarının anlamlı bir şekilde arttığını göstermiştir (66.00±17.58'den 77.65±22.06'ya; p<0.001). Pearson korelasyon analizi, öğrencilerin akademik başarıları (CGPA) ile eğitim öncesi ve sonrası bilgi düzeyleri arasında pozitif bir ilişki olduğunu göstermiştir (r=0.230, p=0.018; r=0.275, p=0.005). **Sonuç:** Bulgular, doğrudan etkileşimli sensör eğitiminin fizyoterapi öğrencilerinin giyilebilir sensör teknolojisini anlama düzeyini önemli ölçüde artırdığını göstermektedir. Akademik başarı ile bilgi kazanımları arasındaki pozitif ilişki, akademik başarısı yüksek öğrencilerin bu eğitimden daha fazla fayda sağlayabileceğini düşündürmektedir. Bu tür uygulamalı eğitimlerin müfredatlara entegrasyonu, gelecekteki profesyonellerin gelişen teknolojileri klinik uygulamalarda etkili bir şekilde kullanmaları için gerekli becerilerle donatılmasında önemli bir rol oynamaktadır.

Anahtar Kelimeler: Giyilebilir elektronik cihazlar, fizyoterapi, öğrenciler, eğitim

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INTRODUCTION

Wearable sensor technology has emerged as a promising tool in physiotherapy and rehabilitation, offering new possibilities for monitoring patients and assessing the impact of clinical interventions in real-world settings. These sensors can be unobtrusively attached to the body or integrated into clothing, allowing for extended data collection periods. Research has focused on developing minimally obtrusive sensors, systems for data gathering, and algorithms to extract clinically relevant information.[1]

Wearable sensors have been applied in gait, balance, and range of motion analysis, providing quantitative methods for assessment and tracking patient progress.[2] Studies have shown the positive effects of wearable sensor-based training on static steady-state balance, with potential improvements in specific gait parameters and proactive balance measures.[3] However, more research is needed to fully evaluate the effectiveness of wearable technologies in physiotherapy and rehabilitation.[4]

The integration of technological advancements in healthcare has the potential to revolutionize methods of practice, the patient-professional relationships, and reduce overall costs. The future of healthcare is expected to see a significant increase in the use of digital services and new technologies such as sensor technology and mobile health applications. Wearable sensors represent one of the most promising technologies, offering cost-effective and efficient healthcare solutions while empowering individuals to manage their health better.[5]

Wearable sensors designed to measure human movement have rapidly evolved, providing greater data storage, smaller sizes, and lighter weights than older devices. These devices are well-known among the public, with various types commercially available for home health and exercise tracking. Most wearable devices contain multiple sensors, such as magnetometers, gyroscopes, and light sensors, with accelerometers being the most common.[6]

The market for wearable sensors has grown substantially in recent years. These technologies, due to their small size and low cost, offer a viable alternative to gold-standard technologies for remote, real-time objective assessments, particularly in lower limb rehabilitation.[7,8] They can create a biofeedback loop, empowering patients and increasing compliance levels, often the weakest points in any rehabilitation regimen.[9]

Euleria XClinic is a certified Class 2a medical software that enhances the quality and efficiency of rehabilitation sessions. It interacts with wearable inertial sensors, allowing physiotherapists to conduct biofeedback exercises and objective assessments with their patients. Supported by several prestigious universities, Euleria XClinic complies with the highest standards of reliability and data protection.[10]

In physiotherapy and rehabilitation, technological approaches are continuously evolving, facilitating assessment and treatment methods. This study aims to introduce students to emerging technology and improve the rehabilitation process through practical sensor training with wearable sensor technology. Specifically, this research investigates the impact of such training on the knowledge levels of physiotherapy and rehabilitation students regarding wearable sensor technology.

Techno-therapy is a movement in which health researchers, clinicians, technologists, and entrepreneurs collaborate on new approaches to therapy, emphasising the therapist-patient relationship and incorporating great innovations.[11,12] Techno-therapy methods based on information and communication technologies, such as tele-physiotherapy, can make the rehabilitation process management easier and are effective and usable in many disease groups.[13-15] Robotic techno-therapy methods, which increase the reproducibility, productivity, and efficiency of movement, significantly assist therapists in administering treatment.[16-18]

However, techno-therapy equipment is rarely used in small cities and rehabilitation centers. Therefore, physiotherapists may be unaware of techno-therapy, and patients may not benefit from this equipment. A study examining the knowledge of physiotherapists about techno-therapy in Hatay, Turkey, highlighted the importance of updating physiotherapists about rehabilitation technology and encouraging regular in-service training.[19] The study found that most physiotherapists did not have sufficient knowledge about techno-therapy devices and recommended that universities organize instruction at regular intervals to help physiotherapists update their knowledge about new technologies.

METHOD

Study Design

The study was designed as a survey study to evaluate the impact of practical sensor training on the knowledge levels of physiotherapy and rehabilitation students regarding wearable sensor technology.

Research Questions/Hypotheses

H0: Practical training on wearable motion sensors will not change the knowledge level of physiotherapy and rehabilitation students regarding the advantages, benefits, and reasons for using this technology.

H1: Practical training on wearable motion sensors will increase the knowledge level of physiotherapy and rehabilitation students regarding the advantages, benefits, and reasons for using this technology.

Variables

Dependent Variable: Knowledge level about the use of motion sensors in physiotherapy and rehabilitation (measured by survey score).

Independent Variable: Sociodemographic characteristics.

Study Location and Duration

The study was conducted in the Physiotherapy and Rehabilitation department laboratories of Fenerbahçe University. The practical training session was held on May 8, 2024, and the study spanned from September 2024 to December 2024, following the approval of the ethics committee and institutional permission.

Sample Size Determination

The required sample size for this study was determined using a priori power analysis for a paired-sample t-test. Based on the effect size calculated from the study by Gordt et al. (2018), where a mean difference of 10 and a standard deviation of 15 were reported, the estimated effect size (Cohen's d) was calculated to be 0.67.[3] With a significance level (α) of 0.05 and a statistical power (1-β) of 0.80, the minimum required sample size was calculated to be 102 participants. The study included 111 students from the Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation at Fenerbahçe University. Volunteers were informed about the study's purpose, duration, and procedures, and the study was conducted by the Helsinki Declaration. A practical workshop on wearable motion sensors was provided to those who volunteered to participate. The total number of participants was deemed sufficient to detect statistically significant differences with the desired power, based on the power analysis.

Inclusion Criteria: -Being a student of the Physiotherapy and Rehabilitation Department at Fenerbahçe University.
-Willingness to participate in the study.

Exclusion Criteria: Unwillingness to participate in the study.

Data Collection Methods and Tools

Demographic Information Form (Appendix-1): This form records participants' sociodemographic data.

Knowledge Level Measurement on the Use of Motion Sensors in Physiotherapy and Rehabilitation: A 20-item Likert-type scale (Appendix-2) inspired by similar survey studies from the literature and designed by the researchers to measure knowledge levels. Each item is scored from 1 to 5 (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree).

Intervention

Practical Motion Sensors Training: Participants received hands-on training from the official distributor of Euleria Health's Riablo and XClinic products. The training, conducted face-to-face on May 8, 2024, included demonstrations, report generation, and analysis. Students experienced the entire system, with presentations on global applications and scientific studies. The training was interactive with real-time Q&A and conducted in both Turkish and English (Figure 1,2).

Figure 1. Motion Sensors Training

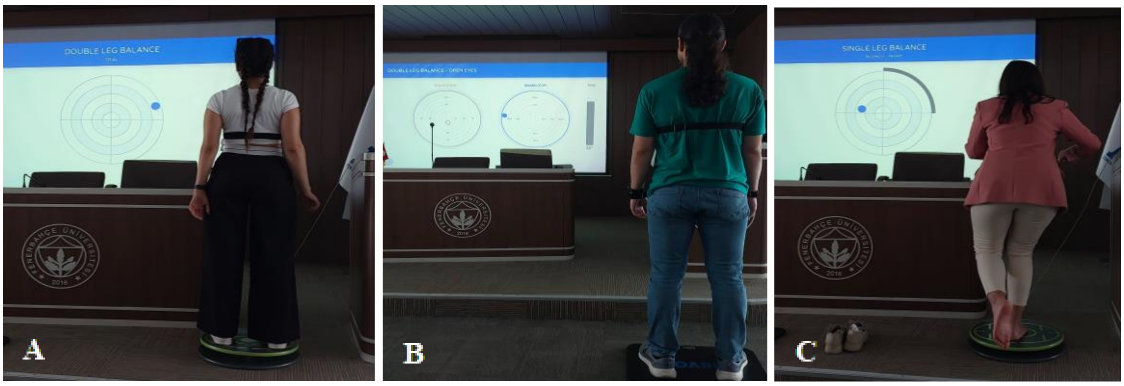

Figure 2. Practical Motion Sensors Training
Exercises 2A, B. double leg balance training; 2C. single leg balance training

Euleria XClinic

Euleria XClinic is a certified class 2a medical software, compliant with the Medical Device Regulation (MDR) 2017/745. This system was utilized to enhance the quality and efficiency of rehabilitation sessions by interfacing with wearable inertial sensors. The system is designed to facilitate biofeedback exercises and objective assessments, providing a portable and scalable solution for physiotherapists.

Exercise Protocol and Biofeedback Mechanism

The Euleria XClinic system interacts with two wearable inertial sensors, which are strategically placed on body segments based on the targeted joint or movement. The software includes a comprehensive library of over 100 exercises, addressing all major body areas and rehabilitation goals. The exercises can be conducted using standard rehabilitation equipment such as beds, wall bars, and parallel bars, with the system providing real-time audio-visual biofeedback. This biofeedback is crucial for guiding the patient in performing exercises correctly, by displaying the ideal movement trajectory and offering corrective feedback if compensatory movements are detected. The biofeedback mechanism is designed to enhance neural plasticity, supporting the reorganization of neural networks and the restoration of motor patterns.

Customization and Motivation

The Euleria XClinic system allows for extensive customization of each exercise, including the ability to adjust parameters such as the duration of eccentric and concentric contractions. This level of customization ensures that the rehabilitation process can be tailored to meet the specific needs and capabilities of each patient. Additionally, the real-time audio-visual biofeedback provided by the system plays a significant role in increasing patient compliance and motivation during exercise sessions, which is critical for achieving optimal rehabilitation outcomes.

Portability

One of the key features of the Euleria XClinic system is its portability. The system is equipped with a mobile stand that allows it to be easily integrated with various types of equipment within the clinic. This portability ensures that the system can be utilized in different settings and contexts, providing flexibility in its application and enhancing the overall efficiency of rehabilitation sessions.

Joint Range of Motion (ROM) Assessments

Euleria XClinic also allows for precise joint range of motion (ROM) assessments, focusing on the ankle, knee, hip, and shoulder joints. The physiotherapist selects the specific movement to be assessed, along with the number of repetitions and rest intervals. The sensors capture detailed angular values during these assessments, with the system providing a comprehensive report that includes the comparison between left and right-side movements.

Data Management and Reporting

Upon completion of exercises or assessments, Euleria XClinic automatically processes and stores the data. This includes general parameters such as completed repetitions, achieved scores, pain reports, ROM data, and compensatory movements. All data is securely stored in Euleria Link, a cloud-based management system that complies with current privacy and data security regulations (GDPR - Regulation 2016/679). The system allows physiotherapists to generate automatic reports in both PDF and CSV formats, facilitating easy monitoring and longitudinal analysis of patient progress.

Patient Registry and Remote Monitoring

Euleria Link facilitates the management of patient records in compliance with GDPR (Regulation 2016/679), allowing the secure storage and updating of clinical data, notes, and media files. The system's remote monitoring capability is supported by the Euleria MyLink app, available on both iOS and Android devices. This app enables patients to perform prescribed exercise programs or outdoor aerobic activities anywhere, maintain communication with their physiotherapist via chat and video calls, complete validated clinical surveys, and share multimedia files securely.

Operational Efficiency and Remote Monitoring

The multi-kit functionality of Euleria XClinic enables the simultaneous management of multiple patients, increasing the operational efficiency of rehabilitation sessions. Additionally, the Euleria MyLink app extends the system's capabilities to remote monitoring, allowing patients to perform prescribed exercises at home under the virtual supervision of their physiotherapist. This feature ensures continuity of care and enhances patient engagement through ongoing communication and feedback.[20] (Euleria Health. (n.d.) Euleria XClinic. Retrieved August 11, 2024, from https://euleria.health/?lang=en)

Data Analysis

Statistical analysis of the study data was performed using the SPSS (Statistical Package for Social Sciences) Version 21.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were expressed as mean, standard deviation, median, and percentage. The normality of the data distribution was assessed using the

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"Kolmogorov-Smirnov Normality Test." For the analysis of pre- and post-training data, the "Paired-Samples T Test" was used for normally distributed data, and the "Wilcoxon Test" was used for non-normally distributed data. The relationship between categorical variables was analyzed using the "Chi-Square Test." A significance level of p<0.05 was accepted for all tests.

Table 1: Demographic characteristics of the participants

Characteristic	Value
Total Number of Participants	111
Age (mean ± SD)	22.5 ± 2.3 years
Gender (Male/Female)	40 / 71
Nationality (Turkish/ Foreigner)	29 / 82
Year in the university ($1^{st}/2^{nd}/3^{rd}/4^{th}$ year)	63/31/14/3
CGPA (mean ± SD)	2.28 ± 0.63

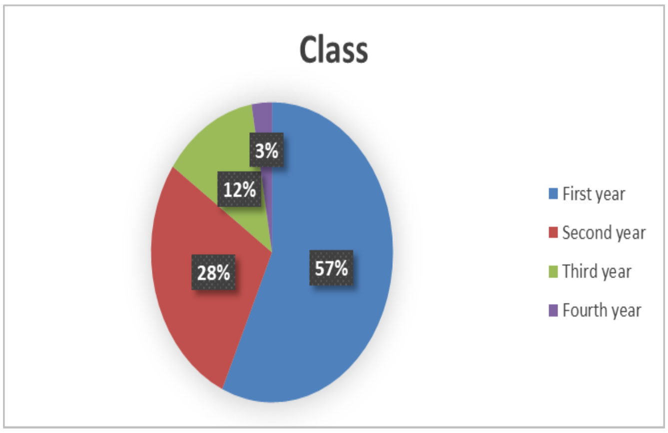

Figure 3. Distribution of the year in the university

RESULTS

The statistical analysis revealed a significant increase in the knowledge level of wearable sensor technology among students post-training. The average survey score before the training was 66.00±17.58, which increased to 77.65±22.06 after the training, and the difference was statistically significant (p<0.001).

The study included 111 students from the Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation at Fenerbahçe University. The demographic characteristics of the participants are summarized in Table 1, Figure 3 and Figure 4.

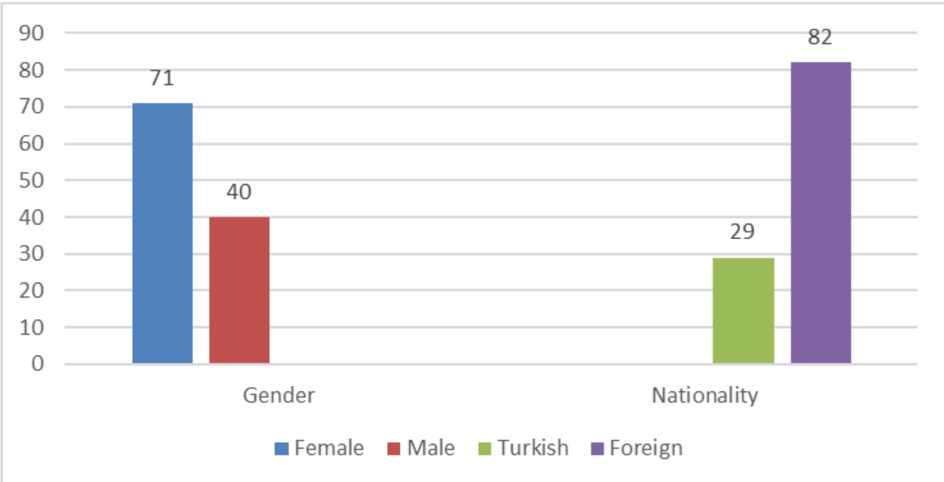

Figure 4. Distribution of the gender and nationality of the students

Pre- and Post-Training Knowledge Levels

The knowledge levels of the participants regarding the use of wearable sensor technology in physiotherapy and rehabilitation were measured using a 20-item Likert-type scale before and after the practical training. The results are shown in Table 2.

A paired-samples t-test was conducted to compare the pre- and post-training knowledge level scores. The results indicated a significant increase in the knowledge levels after the practical training (t (110) = 8.57, p < 0.001).

Table 2. Pre- and Post-Training Knowledge Levels

Time Point	Mean ± SD	Median	Range
Pre-Training	66.00 ± 17.58	65	30-95
Post-Training	77.65 ± 22.06	75	40-100

Table 3. Paired-samples T-test results

Measurement	Mean ± SD (Pre)	Mean ± SD (Post)	Mean Difference ± SD	t-value	p-value
Knowledge Score	66.00 ± 17.58	77.65 ± 22.06	11.65 ± 13.59	8.57	< 0.001

Subgroup Analysis

Further analysis was conducted to explore whether demographic variables such as gender and age influenced the knowledge gain from the training.
Gender: Both male and female participants showed a significant increase in their knowledge levels post-training ($p < 0.001$ for both groups).
Age: There was no significant difference in the knowledge gain based on age groups ($p > 0.05$).

Participant Feedback

Participants provided feedback on the practical training session, indicating high levels of satisfaction with the content and delivery of the training. The interactive nature of the training and the use of real-world examples were particularly appreciated.

Table 4. Participant feedback summary

Feedback Item	Mean ± SD
Satisfaction with training content	4.8 ± 0.4
Satisfaction with training delivery	4.7 ± 0.5
Usefulness of real-world examples	4.9 ± 0.3
Overall training satisfaction	4.8 ± 0.4

Correlation of the pre- and post-training knowledge level and CGPA

There was no correlation between Pre- and Post-Training Knowledge Level and CGPA of the students.

Table 5. Correlation of the pre- and post-training knowledge level and CGPA

	CGPA	
	Pearson's r	p
Pre-training knowledge level	0.230	0.018
Post-training knowledge level	0.275	0.005

*Correlation is significant at the 0.01 level (2-tailed), CGPA: cumulative grade point average

DISCUSSION

This study was designed to evaluate the perspectives of physiotherapy students about wearable sensor technology. The results demonstrated that practical sensor training significantly enhances the knowledge levels of physiotherapy and rehabilitation students regarding wearable sensor technology. This finding underscores the importance of integrating hands-on training sessions into the curriculum to better prepare students for the evolving landscape of physiotherapy and rehabilitation.

The positive correlation between students' academic performance (CGPA) and both pre- and post-training knowledge scores suggests that students with higher academic achievements may derive greater benefits from such training. These findings indicate that students with stronger academic backgrounds are better equipped to integrate and apply new technological knowledge, highlighting the need for personalized educational strategies to maximize learning outcomes for all students. The overall effectiveness of the training program, evidenced by significant knowledge gains across all participants, supports the value of such face-to-face training in enhancing students' understanding of emerging technologies.

The results of this study are consistent with findings from other studies that have investigated the impact of technology-based training on healthcare education. For instance, a study by Han et al. (2015) found that the use of supervised rehabilitation technologies, including wearable sensors, significantly improved functional outcomes and compliance in patients.[9] Similarly, Gordt et al. (2018) reported positive effects of wearable sensor-based balance and gait training on functional performance, further supporting the benefits observed in this study.[3] While Han et al. (2015) and Gordt et al. (2018) focused on patient outcomes, our study highlights the educational benefits for students, providing a complementary perspective on the utility of wearable sensors in training and practice.

Additionally, Alamäki et al. (2019) emphasized the role of wearable technology in home rehabilitation, particularly in rural areas, suggesting that these technologies offer a cost-effective solution for continuous monitoring and assessment.[5] Our study extends this understanding by demonstrating that hands-on training with wearable sensors can prepare future physiotherapists to effectively utilize these technologies, thus potentially enhancing patient care even in resource-limited settings.

The study also highlights the disparity in access to advanced rehabilitation technologies between urban and rural areas, as noted by Huzmeli et al. (2020).[19] By incorporating such technologies into educational programs, universities can help mitigate this gap, ensuring that future physiotherapists, regardless of their practice location, are equipped with the necessary skills and knowledge. This is particularly important in countries where healthcare resources are unevenly distributed.

The high levels of satisfaction reported by participants regarding the training content and delivery further emphasize the value of interactive and practical learning experiences. The positive feedback on the use of real-world examples and the interactive nature of the training aligns with educational best practices, which advocate for learner-centered approaches that actively engage students in the learning process.[21]

Cooperation between health care providers and various professions is required for the design, application, and optimization of cost-effective wireless sensors.[22] Thus, improvement of the knowledge level about wearable health care technology among physiotherapy students is crucial. A study investigating the views of

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physiotherapists' and physiotherapy students' on mobile or wearable health care technology and the use of technology in clinical practice demonstrated positive attitudes toward wearable sensors in clinical practice.[23] In our study, the output of wearable sensor-based training for physiotherapy students was also favorable.

Huzmeli et al. (2020) have reported that most of the physiotherapists did not possess adequate knowledge about technological equipment and applications and that the universities might play an important role in organizing training programs about new technologies through providing mentorship, which is consistent with our findings.[19]

In the literature, the outcomes of technology-based educational studies focused on physiotherapy students are also consistent with the results of our research. Rezayi et al. (2022) found that computerized simulation education effectively improves physiotherapy students' skills and knowledge, supporting the value of technology-enhanced learning, as seen in our face-to-face sensor training approach.[24] Granger et al. (2024) found that students perceived near peer-led simulation as a valuable and engaging approach in physiotherapy education, enhancing their learning experience through interactive and relatable methods.[25] Similarly, our practical sensor training proved effective, highlighting the importance of interactive, peer-supported learning in preparing students for clinical practice.

Mori et al. (2015) have demonstrated that simulation-based learning applications are well adopted by physiotherapy students.[26] In terms of our study results, we also support the idea that sensor technology may enhance students' learning experience in the classroom environment and that it may be efficiently implemented into university curricula. Because wearable sensor technology has started to be used increasingly in clinical settings, further studies are required to detect how wearable sensor technology affects clinical experiences.

Limitations

This study has several limitations. First, it was conducted at a single institution, limiting the generalizability of the findings. Future research should include multiple universities to enhance external validity. The sample size was relatively small (111 students), which may affect the robustness of the results. Additionally, the study only assessed short-term knowledge gains from a single training session, without evaluating long-term retention or practical application in clinical settings. The reliance on self-reported knowledge, without objective measures of skill, further limits the findings. Finally, individual learning styles were not considered, which may have influenced the effectiveness of the training for different students.

CONCLUSION

In conclusion, this study shows that interactive sensor training significantly improves physiotherapy students' knowledge of wearable sensor technology. Despite existing technology-based research in physiotherapy education, studies specifically on wearable sensor technology are lacking. The positive relationship between academic performance and knowledge gains highlights the potential of personalized educational strategies. Integrating such practical training into curricula is crucial for equipping students to effectively use emerging technologies in clinical practice.

Ethical Consideration

Ethical approval for this study was obtained from the Fenerbahçe University Ethics Committee on 27 June 2024 (no:75.2024fbu). All participants were informed about the study and provided written informed consent. The research adhered to the Declaration of Helsinki and no personal identifying data were collected.

Author Contributions

Study idea/design: BN, BÖ
Data collection: EÇ, EZ
Data analysis and interpretation: BÖ
Literature review: BN, MD
Writing of the article: BN, MD, BÖ
Critical review: BN, BÖ
Final approval and accountability: BÖ

Conflict of Interest: *The authors declare no conflict of interest.*

Bu çalışmada kullanılan Euleria Health, yalnızca araştırmanın bilimsel amacı doğrultusunda tercih edilmiştir. Çalışma kapsamında ürünün tanıtımına yönelik herhangi bir ticari veya reklam içeriği bulunmamaktadır. Yazarlar, ürünün üreticisi veya tedarikçisi ile herhangi bir çıkar ilişkisi içinde değildir ve çalışmanın herhangi bir aşamasında maddi veya manevi bir destek almamıştır. Bu bağlamda, araştırma tamamen bağımsız ve objektif bilimsel kriterlere uygun olarak gerçekleştirilmiştir.

The Euleria Health system used in this study was selected solely for scientific research purposes. The study does not contain any commercial or promotional content related to the product. The author(s) declare that they have no conflicts of interest with the manufacturer or supplier of the product, and no financial or non-financial support was received at any stage of the study. Accordingly, the research was *conducted entirely independently and in accordance with objective scientific criteria.*

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MEASUREMENT OF THE LEVEL OF KNOWLEDGE ABOUT THE USE OF MOTION SENSORS IN THE FIELD OF PHYSIOTHERAPY AND REHABILITATION

	1	2	3	4	5
	I strongly disagree	I do not agree	I both agree and disagree	I agree	Absolutely I agree
1. I know the benefits of using motion and gait sensors in physiotherapy assessments.					
2. I have knowledge about the use of motion and gait sensors in the rehabilitation process.					
3. I am aware of the advantages of motion and gait sensors in patient monitoring.					
4. I understand the role of these technologies in improving rehabilitation outcomes.					
5. I am knowledgeable in analyzing data collected using motion and gait sensors.					
6. I know how these sensors can be integrated in different rehabilitation protocols.					
7. I have insight into methods to overcome the challenges encountered in the use of motion and gait sensors.					
8. I think the use of motion and gait sensors was included in my physiotherapy training.					
9. I follow current research and developments regarding the use of these technologies.					
10. I am familiar with the cost effectiveness of motion and gait sensors.					
11. I think that the use of these sensors in physiotherapy evaluations and rehabilitation processes has an impact on patient satisfaction.					
12. I think these technologies can improve physiotherapy practices.					
13. I know how to interpret data obtained using motion and gait sensors.					
14. I think that the use of sensor technologies in physiotherapy will become widespread in the future.					
15. I would like to receive detailed training on the use of motion and gait sensors.					
16. I have information about the effectiveness of sensors on different patient groups.					
17. I know the advantages offered by motion and gait sensors over traditional assessment methods.					
18. I understand the reasons why using motion and gait sensors is preferred in addition to traditional physiotherapy methods.					
19. I will use this system in my own clinic when I graduate.					
20. I think motion and gait sensors should be included more in the physiotherapy training curriculum.					