



Development of the Sport Therapy and Innovation Center (STIC) at Universitas Negeri Medan

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Abstract. This study aims to develop the Sport Therapy and Innovation Center (STIC) at the Universitas Negeri Medan (UNIMED) as a service, research, and education center in the field of sports therapy. The main problem identified is the lack of sports therapy facilities that can support the needs of students, lecturers, athletes, and the general public. This study used a qualitative descriptive approach with an exploratory case study method. Data were obtained through in-depth interviews, direct observation of available facilities, and analysis of institutional documents. The results indicate a real and urgent need to establish a sports therapy center capable of integrating physiotherapy services, injury prevention education, and applied research. These findings support the importance of developing an innovation center that not only serves the rehabilitation aspect but also strengthens practice-based learning and collaborative research within the university environment. In conclusion, the Sport Therapy and Innovation Center (STIC) at UNIMED has the potential to become a model for a science-based sports therapy service center that is integrated, adaptive, and relevant to the latest developments in sports health technology.

Keywords: Innovation, Sports, Rehabilitation, Health, STIC.

1 Introduction

Sport therapy is an integral component of modern sports science, focusing on injury prevention, rehabilitation, enhancement of movement function, and the maintenance of long-term physical health. In both elite sports and general community physical activity contexts, science-based sport therapy approaches have been proven effective in reducing the risk of recurrent injuries, accelerating recovery processes, and sustainably improving physical performance quality [13]. As public participation in physical activity and sports continues to increase, the demand for professional and standardized sport therapy services has become increasingly important.

The development of sport therapy is closely linked to advancements in physiotherapy, biomechanics, kinesiology, and health technology. Recent studies

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indicate that effective sport therapy services must be multidisciplinary, integrated, and grounded in evidence-based practice to address the complexity of injuries and movement dysfunctions comprehensively [4][3]. The integration of clinical approaches, movement analysis, and modern rehabilitation technologies has been shown to improve diagnostic accuracy, intervention effectiveness, and the long-term sustainability of therapeutic outcomes.

In the context of higher education, universities play a strategic role in advancing sport therapy through the integration of the three core missions of higher education: education, research, and community service. The establishment of sport therapy centers within universities functions not only as healthcare service facilities but also as platforms for practice-based learning and applied research [11]. Several studies have reported that university-based innovation centers can accelerate knowledge transfer, promote interdisciplinary collaboration, and enhance graduate relevance to the needs of the health and sports industries [10].

Universitas Negeri Medan (UNIMED), as a higher education institution with recognized strengths in the field of sports science, has significant potential to develop an integrated sport therapy center. However, preliminary assessments indicate that existing sport therapy facilities at UNIMED remain limited, are not systematically managed, and do not yet fully support student practical learning or the development of applied research by faculty members. These conditions also constrain the optimization of rehabilitation services for athletes and the general public who require science-based sport therapy support.

Previous studies have predominantly focused on the clinical effectiveness of sport therapy methods or injury rehabilitation models [9][7]. However, research specifically examining the development of innovation-based sport therapy centers within higher education institutions, particularly in terms of integrating services, education, and applied research, remains relatively limited. Moreover, studies positioning sport therapy centers as part of a university innovation ecosystem in Indonesia are still scarce[1].

Based on this research gap, the development of a Sport Therapy and Innovation Centre (STIC) at Universitas Negeri Medan is both relevant and important to examine. STIC is designed not only as a center for sports injury rehabilitation services but also as a hub for innovation and the advancement of sport therapy knowledge that is adaptive to developments in health technology. This study aims to examine the needs, potential, and development concept of STIC at UNIMED as a model of a science-based sport therapy center that integrates services, education, and research within a higher education environment.

2 Research Methods

This study employed a qualitative descriptive approach with an exploratory case study design. This approach was selected to obtain an in-depth and contextual understanding of the needs, readiness, and development potential of the Sport Therapy and Innovation Centre (STIC) at Universitas Negeri Medan. The exploratory case study design was considered appropriate because the research focuses on a complex and institution-specific phenomenon that has not been widely or systematically examined within the context of higher education institutions in Indonesia.

2.1 Research Design

An exploratory case study design was used to examine existing conditions of sport therapy services, institutional policies, and stakeholder perceptions related to the development of STIC. This approach allowed the researchers to integrate multiple data sources in order to construct a comprehensive understanding of the needs and potential development models for an innovation-based sport therapy center.

2.2 Research Site and Participants

The study was conducted at Universitas Negeri Medan (UNIMED). Participants were selected purposively based on their level of involvement and relevance to sport therapy development. The research participants included:

- Faculty leaders and managers of sport-related units
- Academic staff in sports science, physiotherapy, and health-related fields
- Students enrolled in sports-related study programs
- Sports practitioners and healthcare support personnel

The selection of participants aimed to capture diverse perspectives regarding service needs, educational processes, and research development in sport therapy.

2.3 Data Collection Techniques

Data were collected using multiple techniques to ensure the depth and credibility of the findings, including:

- In-depth interviews

Semi-structured interviews were conducted to explore stakeholders' perspectives, experiences, and expectations regarding the development of STIC. Interview guidelines were designed flexibly to allow for the exploration of strategic issues that emerged during the research process.

- Direct observation

Observations were carried out on sports facilities, health support infrastructure, and learning and service activities related to sport therapy. This technique aimed to identify existing conditions, facility limitations, and opportunities for service integration.

- Document analysis

The analyzed documents included the university's strategic plans, academic policies, curriculum documents, and activity reports relevant to the development of sport therapy and innovation centers.

2.4 Data Analysis Techniques

Data were analyzed using a thematic analysis approach. The analysis process consisted of several stages:

- Data reduction, by selecting and focusing on data relevant to the research objectives
- Coding and categorization, to identify key themes related to the needs, challenges, and development potential of STIC
- Data synthesis and interpretation, to formulate an integrated development concept for STIC that aligns service provision, education, and research

This approach enabled the researchers to link empirical findings with theoretical frameworks and previous research.

3 Results and Discussion

3.1 Existing Conditions of Sport Therapy Services at UNIMED

The results of observations and document analysis indicate that Universitas Negeri Medan possesses a number of sports facilities that are relatively adequate to support learning activities and training programs. However, these facilities have not yet been supported by an integrated, standardized, and science-based sport therapy service system. Injury rehabilitation services remain partial in nature, distributed across several units, and are not organized within a systematic and sustainable service framework.

This condition reflects a gap between the availability of sports facilities and the supporting sports health system, as also reported in studies by De Luigi [8] and McKay et al. [12], which emphasize that many higher education institutions have adequate sports infrastructure but have not developed integrated sport therapy systems. As a result, the potential of these facilities has not been optimally utilized for practical learning and applied research.

Interview findings further reinforced these observations, with both students and lecturers highlighting limitations in conducting sport therapy practicum and case-based research due to the absence of a representative sport therapy center. This condition directly affects the quality of practice-based learning and the development of students' professional competencies, which are key indicators in modern higher education in sports science.

3.2 Needs and Urgency for the Development of the Sport Therapy and Innovation Centre

Analysis of interview data revealed a clear and urgent need for the establishment of an integrated sport therapy center at UNIMED. Stakeholders emphasized that STIC is required not only for injury rehabilitation services but also as a center for injury prevention education, functional fitness enhancement, and sports performance recovery.

These findings are consistent with studies by Leatherman [6] and Schneider [19], which report that sport therapy centers within educational institutions can enhance rehabilitation effectiveness through multidisciplinary and evidence-based approaches. Furthermore, the integrated approach combining rehabilitation and injury prevention education has been shown to be more effective in reducing recurrent injury rates compared to conventional, reactive rehabilitation service models.

The urgency of STIC development is also driven by the growing demand for sports health services that focus not only on treatment but also on prevention and optimization of movement function. In this context, STIC serves as a proactive service center that supports long-term health among physically active individuals.

3.3 STIC as a Practice-Based Learning Center

The findings indicate that the development of STIC has significant potential to strengthen the implementation of practice-based learning at UNIMED. Direct student involvement in standardized sport therapy services enables the integration of theoretical knowledge, clinical practice, and academic reflection.

This finding aligns with the perspectives of Rosario [18] and Perrin [16], who assert that practice-based learning in higher education enhances professional skills, problem-solving abilities, and graduate work readiness. In the field of sports science, this learning model is particularly relevant, as professional competencies cannot be optimally developed through theoretical instruction alone.

Accordingly, STIC can function as a living laboratory that provides an authentic learning environment for students, while simultaneously strengthening lecturers' competencies in developing case-based and applied learning approaches.

3.4 Integration of Applied Research and Sports Health Technology Innovation

Another important theme emerging from the data analysis is the role of STIC as a center for applied research and innovation in sports health technology. The development of STIC enables the implementation of research based on real-world cases, particularly in the areas of injury rehabilitation, movement analysis, and technology-based sport therapy method development.

This is consistent with the concept of university-based innovation centers, which position higher education institutions as key drivers of research-based innovation [5]. Nagorna [14] and Putra [17] emphasize that the integration of research and innovation

in sports services can accelerate the development of therapy methods that are adaptive to user needs and technological advancements.

In this context, STIC has the potential to serve as a collaborative platform for academics, practitioners, and external partners in developing applicable and sustainable sports therapy technologies and methods.

3.5 Conceptual Model for the Development of the Sport Therapy and Innovation Centre

Based on the research findings and theoretical review, STIC is conceptualized as an integrated center built upon three main pillars:

- Science-based sport therapy services, including physiotherapy, injury rehabilitation, and injury prevention
- A professional learning and training center, supporting student practicums and competency development for sports professionals
- A center for applied research and innovation, promoting collaboration among lecturers, students, and external partners

This conceptual model illustrates that STIC functions not only as a service unit but also as a core component of the university's innovation ecosystem. The integration of these three pillars reflects a triple helix approach to higher education innovation development, as recommended [15] [2].

3.6 Implications of STIC Development for Higher Education Institutions

The development of STIC at UNIMED has strategic implications for enhancing the quality of education, research, and community services. STIC has the potential to strengthen the university's position as a center for science-based sports science development, improve graduate relevance to labor market demands, and expand institutional contributions to public health and physical fitness. Thus, STIC can be positioned as a model of a science-based sport therapy center that is adaptive, innovative, and sustainable within higher education institutions, particularly in the context of advancing sports education and sports health services in Indonesia.

4 Conclusion and Recommendations

4.1 Conclusion

This study concludes that the development of a Sport Therapy and Innovation Centre (STIC) at Universitas Negeri Medan represents a strategic need grounded in empirical conditions, academic demands, and advancements in modern sport therapy science. The findings indicate that existing sport therapy services at UNIMED remain limited and lack systematic integration, resulting in suboptimal support for practice-based learning, applied research development, and rehabilitation services for athletes and the general public.

The development of STIC is considered capable of addressing these challenges through an integrated approach that connects science-based sport therapy services, academic learning processes, and applied research activities within a single innovation ecosystem. With the proposed model, STIC has the potential to become a university-based sport therapy center that is adaptive, sustainable, and responsive to developments in sports health technology.

4.2 Recommendations

Based on the research findings and conclusions, it is recommended that Universitas Negeri Medan integrate the development of STIC into its institutional strategic policies, particularly in infrastructure planning, human resource strengthening, and the establishment of a professional sport therapy service management system. The integration of STIC with sports science and health-related curricula should also be implemented to strengthen practice-based learning and enhance graduate competencies. Furthermore, the development of STIC should be directed toward collaboration with external partners, such as hospitals, physiotherapy clinics, sports associations, and sports health technology industries, in order to expand service coverage and foster innovation in sport therapy. Future research is recommended to examine the operational implementation of STIC and to evaluate its impact on service quality, learning effectiveness, and the development of sport therapy research within higher education institutions.

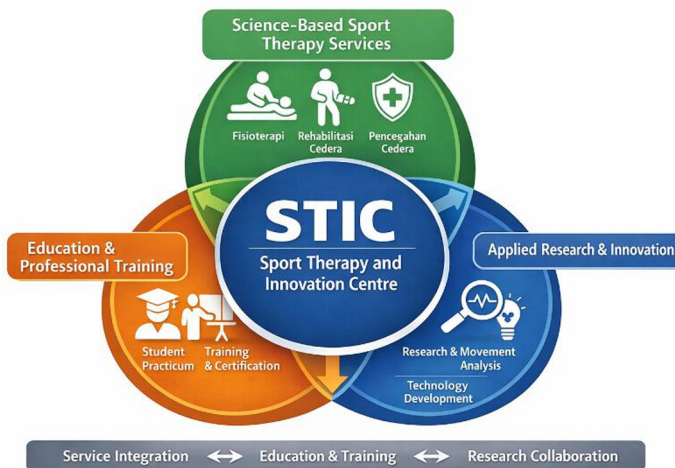


Fig. 1. Conceptual Model of the Sport Therapy and Innovation Centre (STIC).

The conceptual model of the Sport Therapy and Innovation Centre (STIC) is designed as an integrated framework that connects science-based sport therapy services, practice-based education and professional training, and applied research and innovation. This model positions STIC not merely as a service unit, but as a core component of the university innovation ecosystem.

The model is built upon three interrelated pillars. The first pillar focuses on science-based sport therapy services, including physiotherapy, injury rehabilitation, and injury prevention, which aim to support physical health, functional movement, and long-term performance sustainability. The second pillar emphasizes education and professional training, serving as a platform for student practicums, competency development, and professional certification through direct involvement in real-world sport therapy services. The third pillar highlights applied research and innovation, encompassing movement analysis, technology-assisted rehabilitation, and the development of innovative sport therapy methods.

The integration of these three pillars enables continuous interaction between service delivery, education, and research. Such integration supports knowledge transfer, enhances learning relevance, and fosters innovation in sport therapy practices. Accordingly, the STIC conceptual model reflects a triple helix approach to higher education development, promoting collaboration between academic institutions, professional practice, and external stakeholders in advancing science-based sport therapy.

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