Guidelines and Proposed Actions for the Responsible Use of **Artificial Intelligence (AI)** in Physiotherapy in Finland

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SUOMEN Fysioterapeutit

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BACKGROUND

Artificial intelligence and future opportunities in physiotherapy – from research-based knowledge to national proposed actions (AI in Physiotherapy). This project received financial support from the Finnish Work Environment Fund (Työsuojelurahasto) under Project No. 240522.

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INTRODUCTION

INTRODUCTION

There is a clear need to develop physiotherapy practice, as rehabilitation resources are expected to remain stable or even decrease while the demand for rehabilitation continues to grow both nationally and internationally [1,2]. Integrating artificial intelligence (AI) into physiotherapy practice offers a potential solution by freeing up professional resources for direct human interaction [3,4]. However, the use of AI as a tool also requires physiotherapy professionals and students to acquire new work-related skills and practices [5,6]. At the organizational level, AI-driven changes are reflected particularly in the need for continuous competence development and maintenance, as well as in the establishment and standardization and modelling of recommended practices. At the societal level, there is an increasing need for national guidance, harmonized operating models, and structures that support the responsible use of AI in physiotherapy. Importantly, previous national assessments on AI use have not adequately considered physiotherapy as a discipline or addressed its specific characteristics within the Finnish health and social care system [7]. The Guidelines and Action Proposals for the Responsible Use of Artificial Intelligence (AI) in Physiotherapy in Finland were developed on a research basis within the project "*The use of artificial intelligence and future opportunities in physiotherapy – from research evidence to national guidelines and proposed actions*" (hereafter, the research project).

The study was conducted by researchers from the Faculty of Sport and Health Sciences and the School of Wellbeing (JYU.Well) at the University of Jyväskylä, in collaboration with the Finnish Association of Physiotherapists. This project received financial support from the Finnish Work Environment Fund from March 2025 to August 2026. The content of the guidelines and proposed actions is based on the findings of the research project's sub-studies, including the literature review, survey, interviews, and Delphi expert panel [8]. The development of both the guidelines and the proposed actions drew on the multidisciplinary expertise of the researchers, the collaborating organization, and collaborating partners. The guidelines provide directly applicable information for practice, as well as organization- and societal-level action proposals for the use of artificial intelligence in physiotherapy as a professional tool. They also support the development of AI-related competencies and work cultures throughout different career stages, while acknowledging the importance of leadership and work organization. These recommendations and proposed actions provide a strategic foundation for the controlled, responsible, and impactful use of AI in physiotherapy. At the same time, they support the sustainable transformation of the physiotherapy profession and the long-term development of the health and social care service system.

The structure of the Guidelines and Proposed Actions is as follows. First, key AI-related concepts are presented (Table 1). The subsequent guideline section synthesizes the key themes concerning the responsible use of artificial intelligence in clinical practice, leadership, education, and research, development, and innovation (RDI) activities. The regulatory section describes the legislation and regulations relevant to the use of artificial intelligence in physiotherapy at both the national and European Union levels.

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[8] Sjögren, T., Laine, S., Korpi, H. & Heilala, V. (2026). Tekoälyn käyttö ja tulevaisuuden mahdollisuudet fysioterapiassa – tutkitusta tiedosta kansallisiin suosituksiin ja toimenpide-ehdotuksiin (Tekoäly fysioterapiassa). Työsuojelurahaston Loppuraportti.

The sections include also illustrative examples of the application of AI in physiotherapy, together with an overview of quality management in AI. Second, proposed actions at the organizational and societal levels are outlined. The proposed actions at the organizational level specify the elements recommended for inclusion in organizational AI policies and guidelines, as well as the key factors to be considered in their development. The societal-level proposed actions are primarily targeted at decision-makers and outline the national-level development needs identified through the research project to support the responsible implementation and use of AI in physiotherapy. Finally, the responsibilities and obligations related to the use of AI in physiotherapy are illustrated through a case example in neurological physiotherapy, including references to relevant key regulations. References are presented at the end of the document in dedicated sections: first, sources for further reading related to the guidelines; second, reference lists organized according to the core themes of the guidelines; and finally, a comprehensive reference list for the proposed actions.

ARTIFICIAL INTELLIGENCE (AI)

Artificial intelligence (AI) has rapidly become an integral part of society, working life, and everyday practices in recent years. For many, it has become familiar primarily through various applications and digital services, however, its role and potential in physiotherapy are still emerging. AI can provide new tools to support physiotherapy practice, as well as opportunities to strengthen decision-making and enhance service development. At the same time, the appropriate and responsible use of AI requires new competencies and a thorough understanding of its capabilities and limitations. However, AI is conceptualized and applied in diverse ways, resulting in varying interpretations and expectations regarding its capabilities and use. In this project, the key concepts related to AI are defined as follows. AI refers to the study and development of systems that model human cognitive abilities and use computational methods for perception, reasoning, learning, and problem-solving [9]. The European Parliament defines AI as the ability of a machine to display human-like capabilities such as reasoning, learning, planning, and creativity [10]. The rapid development of AI has made large language models part of the peoples' everyday lives [11,12]. AI encompasses various subfields and technologies [13], and the concepts related to them are sometimes used inconsistently [14]. In everyday language, AI is often primarily associated with large language models [15]. Table 1 provides a more detailed overview of key concepts related to AI [16].

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TABLE 1 | **KEY CONCEPTS RELATED TO AI**

CONCEPT	DEFINITION
Artificial Intelligence (AI)	A general term for technologies that enable functions considered intelligent, such as learning, reasoning, and decision-making [9,17].
Artificial Intelligence (AI) System	"A machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments" [17].
Algorithm	A set of well-defined and ordered instructions or rules that are followed step by step to perform a task, solve a problem, or produce a specific outcome [18,19].
Artificial Intelligence (AI) Model	An algorithmic model designed for a specific task—such as reasoning, classification, prediction, or decision-making—and based on approaches such as rule-based systems or machine learning [17–19].
Rule-Based AI Model	An AI model that makes decisions based on predefined rules and logical conditions, without learning from data [19].
General-Purpose AI Models (GPAI), Foundation Models (FM)	AI models trained on large and diverse datasets that can perform a wide range of tasks and be applied across multiple use cases [17,20].
Machine Learning Model	An AI model that uses computational methods to learn from data through supervised, unsupervised, or reinforcement learning [18-19,21]. For example, service needs forecasting, predictive models, customer segmentation, and interpretation of medical imaging [22].
Deep Learning	A subfield of machine learning that uses multi-layered neural networks inspired by the structure of the human nervous system. It can identify, classify, optimize, and make predictions based on data [18–19,21]. For example, medical imaging analytics, classification and interpretation, and predictive models [22].
Generative Model	An AI model capable of generating new content, such as text, images, or audio [17–19,21]. For example, documentation support tools, and intelligent AI symptom checker [22].
Large Language Models (LLM)	A subcategory of generative AI models that are trained on large text datasets to understand and generate natural language [18–19,21]. For example, AI-powered customer service and real-time interpretation [22].

The table continues on the next page

[17] EU:n tekoälyasetus 2024/1689.
[18] Guettala, M., Bourekkache, S., Kazar, O., & Harous, S. (2024). Generative artificial intelligence in education: Advancing adaptive and personalized learning. Acta Informatica Pragensia, 13(3), 460–489. doi: 10.18267/j.aip.235
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CONCEPT	DEFINITION
Adaptivity	The ability to adjust or adapt to changing conditions and environment [18].
Personalization	The ability of a system or technology to adapt to the needs and preferences of an individual user [18].
Scalability	The ability of a system to maintain its functionality and performance as the volume of data, number of users, or level of usage increases [23].
Usability	The extent to which a system, product, or service can be used to achieve specified goals effectively, efficiently, and with user satisfaction [24].
Ease of Use	The ability of a system to be easy to learn and to use with minimal effort and without extensive instructions [25].
Hallucination	Refers to situations where a generative AI model produces information that appears plausible but is incorrect. This occurs when the model combines learned patterns based on probabilities in a way that does not reflect reality [21].
Bias	Systematic distortions in an AI model's outputs that arise, for example, from imbalances or deficiencies in the training data, and that may lead to narrowed or stereotypical outcomes [17–18,26].

[23] Shivashankar, K., Al Hajj, G. S., & Martini, A. (2025). Scalability and maintainability challenges and solutions in machine learning: A systematic literature review. Cornell University. doi: 10.48550/arXiv.2504.11079
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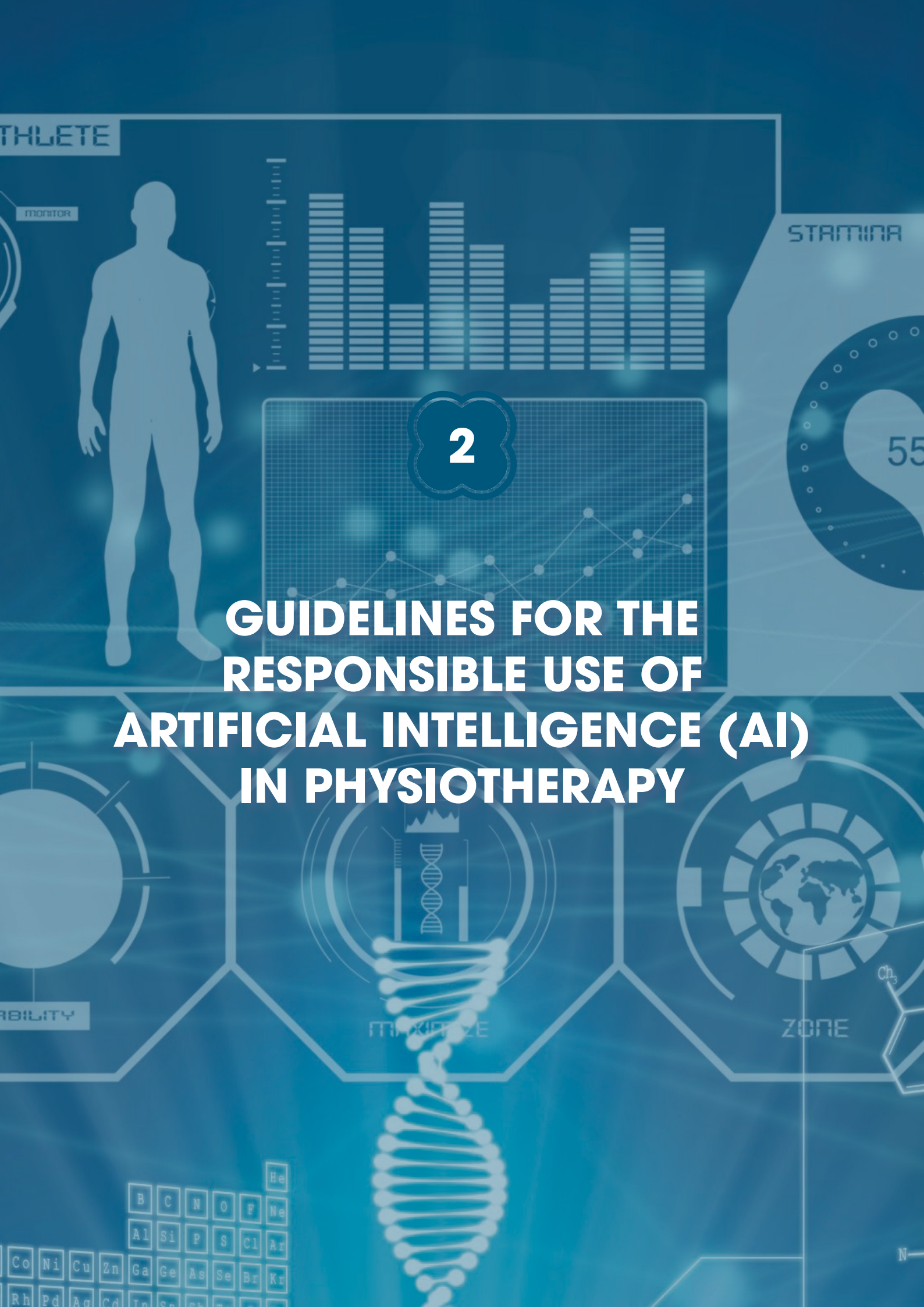
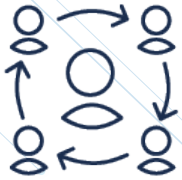


2

GUIDELINES FOR THE RESPONSIBLE USE OF ARTIFICIAL INTELLIGENCE (AI) IN PHYSIOTHERAPY

Guidelines for the Responsible Use of Artificial Intelligence (AI) in Physiotherapy



Human-centered AI use

- Rehabilitee-centeredness
- Professional competence

Responsibilities and obligations

- Regulation of the use of AI
- Legal responsibilities

Benefits and competence

- Leadership and development
- Continuous learning

AI quality management

- Prerequisities for the use of AI
- Evaluation of the use of AI

2.1 | Rehabilitee-centeredness

Rehabilitee consent for the use of AI in physiotherapy

- Requested when AI is used to process the rehabilitee's background information, to generate statements, recommendations, or solutions concerning the rehabilitee, or when AI is used as part of clinical physiotherapy
- Given on a case-by-case basis and may be limited to a specific purpose
- Not required when the use of AI is not related to an individual rehabilitee but is instead used in the physiotherapist's work, for example, for general information retrieval within the field, structuring data, or service development.
- **Example use case:** AI analyzes the rehabilitee's movement and performance using video data or data or sensors

Rehabilitee autonomy in the use of AI in physiotherapy

- The rehabilitee or their family member, caregiver or other individual involved in their support and everyday life is clearly informed about how and in what situations AI is used across different stages of rehabilitation: assessment and evaluation, planning, implementation, and follow-up
- The rehabilitee is ensured the opportunity to participate in and influence the use of AI in their own rehabilitation
- **Example use case:** smart gym equipment that automatically adjusts training resistance or guides performance, as well as smart devices that guide and monitor physical activity and movement

Respecting rehabilitee individuality in the use of AI in physiotherapy

- The rehabilitee's values, attitudes, preferences, needs, goals, and experiences guide the use of AI in physiotherapy
- The rehabilitee's individual situation, language and cultural background, as well as their overall living environment, are considered when using AI in physiotherapy
- **Example use case:** AI-assisted interpreting or text translation to support communication

2.2 | Professional competence

Ethical use of AI in physiotherapy

- The use of AI must not lead to inequality or unequal treatment among rehabilitees
- Particular attention is paid to vulnerable groups, such as children and adolescents, older adults, and individuals whose health condition affects their functioning and self-management
- AI-generated information must not be used if it is not appropriate for the rehabilitee's situation
- **Example use case:** AI is utilized in client communication and in services that provide personalized guidance in accessible formats (e.g., chatbot, text, image, audio)

AI as part of the physiotherapist's evidence-based clinical reasoning

- The physiotherapist is responsible for the accuracy of the information they use, as well as for problem-solving and clinical reasoning; these cannot be delegated to AI
- AI-generated results and their implications for rehabilitation are reviewed with the rehabilitee and, when necessary, with their family member, caregiver or other individual involved in their support and everyday life
- **Example use case:** compiling the rehabilitee's background information, summarizing assessment and evaluation data, and drafting physiotherapy and rehabilitation plans

Critical AI literacy of the physiotherapist

- The physiotherapist has sufficient understanding of how AI systems use client data in functional assessment, in generating predictions, and in developing exercise programs, as well as of the uncertainties associated with these processes
- The reliability, suitability, and relevance of AI-generated information, predictions, and recommendations are critically evaluated before use, during use, and after use
- **Example use case:** the physiotherapist reviews and revises AI-generated documentation and plans before finalizing them

STORY 1 | REHABILITEE MARY AND PHYSIOTHERAPIST MINNA

Mary attends physiotherapy due to neck pain. Physiotherapist Minna assesses her symptoms, background, and goals and forms an initial clinical understanding of the situation.

During the assessment, AI is used to support the structuring of information and to review possible options. Before its use, Mary was informed and gave her consent.

The suggestions generated by AI are compared with Minna's own observations and Mary's situation. Some are rejected, while others are adapted. The final assessment and physiotherapy plan are based on Minna's clinical reasoning.

Minna develops a follow-up plan together with Mary based on her goals. Finally, the documentation is reviewed together with Mary.

2.3 | Regulation of the use of AI

The use of AI by self-employed physiotherapists and employees

- A self-employed physiotherapist is considered a healthcare service provider and is responsible for the use of AI in compliance with legislation
- A practitioner working in another organization's facilities is responsible for the use of AI in their work in accordance with the organization's guidelines
- An employee is responsible for the use of AI in their own work tasks in compliance with legislation; overall responsibility lies with the organization
- **Further reading:** Health Care Act (1326/2010); Act on the Processing of Client Data in Healthcare and Social Welfare (the Client Data Act, 703/2023); Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (AI Act)

Transparency of the use of AI in physiotherapy

- The use of AI in the preparation of a document is recorded
- The rehabilitee is informed about the use of AI at the beginning of the interaction, throughout the physiotherapy process
- The rehabilitee has the right to know how AI is used, where the data are stored, and who has access to the data
- The rehabilitee has the right to review documentation produced with the assistance of AI and to request corrections
- **Further reading:** Act on the Status and Rights of Patients (785/1992); Regulation (EU) 2016/679. (GDPR)

STORY 2 | SELF-EMPLOYED PHYSIOTHERAPIST MICHAEL

Michael works as a self-employed physiotherapist. Alongside his work, he observes how AI tools are becoming more common and could help, for example, with documentation and structuring background information.

There are many AI tools available, but it is difficult to find clear, physiotherapy-specific guidance on their appropriate use. Michael seeks information from various sources and cautiously experiments with what works in his practice.

However, he does not always have sufficient expertise or time to assess the compliance and suitability of different AI tools for his work.

In his daily work, Michael therefore ends up making decisions based on the information and time available, without certainty about how well they align with broader practices or requirements. Michael decides to pursue continuing education in artificial intelligence to ensure that his practice is appropriate and accurate.

2.4 | Legal responsibilities

Data security and data protection in the use of AI in physiotherapy

- The physiotherapist must use only organization-approved devices and AI systems when processing health data
- AI used in physiotherapy is often high-risk, which means that stricter requirements apply for data security and data protection
- **Further reading:** Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (AI Act), Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data (GDPR)

Risk assessment and management of AI in physiotherapy

- The physiotherapist must follow the organization's guidelines and terms of use when using AI
- The organization assesses potential risks before introducing AI and defines procedures to manage those risks
- AI systems used in physiotherapy may be subject to EU's medical device regulation
- The entity procuring the AI system is responsible for ensuring that it meets applicable legal requirements'
- **Further reading:** Regulation (EU) 2017/745 on medical devices (MDR), Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (AI Act)

Intellectual property rights in the use of AI in physiotherapy

- The physiotherapist must verify the accuracy of AI-generated information and is responsible for its appropriate use
- Most ready-made texts, images, and materials are protected by copyright and must not be processed using AI in violation of terms of use or copyright law
- **Further reading:** Copyright Act (404/1961), Directive (EU) 2019/790 of the European Parliament and of the Council on copyright and related rights in the Digital Single Market

2.5 | Leadership and development

Data-driven management of the use of AI in physiotherapy

- The organization takes employees' well-being and workload into account in the implementation and use of AI
- The organization evaluates the benefits and impacts of AI use as part of its development activities
- The organization supports the development of a AI-positive work culture that promotes AI competence development
- The organization collects feedback on the use of AI to improve training and practices
- **Example use case:** AI can streamline administrative tasks and free up physiotherapists' time for rehabilitees and interprofessional collaboration

Sustainable and responsible use of AI in physiotherapy

- AI is used when it supports the delivery and quality of physiotherapy, improves documentation, or helps save resources
- AI is used when it provides practical benefits compared with other ways of working
- **Example use case:** The use of artificial intelligence is regularly evaluated in relation to the benefits achieved, associated costs, and environmental impacts

Prerequisites for co-development of AI in physiotherapy

- The organization ensures that physiotherapists' views and experiences are considered in the use of AI
- The organization ensures that physiotherapists' perspectives and experiences are considered in the implementation and use of AI
- The organization ensures that physiotherapists are actively involved in the implementation and development of AI
- The organization implements and promotes the use of AI in physiotherapy in a planned and phased manner, drawing on research evidence and collected feedback on its impacts and relevance
- **Further reading:** Finnish National Board on Research Integrity (TENK). (2026). Artificial Intelligence in Research: Research Integrity and Ethical Principles; European Patients' Forum (EPF). (2023). AI in healthcare. Advancing Patient-Centric Care through Co-design and Responsible Implementation

STORY 3 | ORGANIZATION X

Organization X introduces an AI assistant to support physiotherapists' work. Before implementation, the situations in which it will be used and the types of information that can be entered are defined.

The use of the assistant is piloted in a smaller unit as part of everyday work. Physiotherapists test how it supports documentation and the structure of information in different rehabilitee situations. At the same time, shared practices are agreed upon, including how the use of AI is utilized as part of daily work.

During the pilot, experiences are collected from both physiotherapists and rehabilitees. Some report that their work becomes more efficient, while in other situations substantial editing is still needed. Based on these experiences, practices are refined, and the use of AI is limited to ensure it supports the work as effectively as possible.

2.6 | Continuous learning

Use of AI in physiotherapy education

- Teaching supports the responsible use of AI by students to foster the development of independent clinical reasoning.
- Teaching strengthens students' critical AI literacy and their ability to assess the appropriate use of AI
- Education takes into account AI-related recommendations in physiotherapy, as well as institutional, national, and EU-level guidelines
- **Further reading:** Arene. (2026). Arene's recommendations on the use of artificial intelligence for universities of applied sciences; Mankinen, K., Mäki, A., & Puuska, H. M. (2025). How to conceptualize AI-driven transformation in higher education institutions. In Proceedings of EUNIS (Vol. 107, pp. 186-195)

Self-directed learning and peer support in AI use in physiotherapy

- Discussion among colleagues about the benefits, drawbacks, opportunities, and risks of AI is encouraged within the workplace
- The organization encourages the development and maintenance AI competence through self-directed learning, continuing education, and further studies
- **Further reading:** the Finnish Association of Physiotherapists. (2016). The Core competences of physiotherapist; National Advisory Board on Social Welfare and Health Care Ethics (ETENE). (2026). Ethical principles in social welfare and health care. [in Finnish]

Further training in AI use in physiotherapy

- Organizations are recommended to integrate AI training into their staff training and professional development programs.
- Organizations are encouraged to allow physiotherapists to participate in AI training during working hours and to cover the associated costs
- **Further reading:** Decree of the Ministry of Social Affairs and Health on continuing education for social and health care personnel (57/2024) [in Finnish]; Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (AI Act)

STORY 4 | PHYSIOTHERAPY STUDENT ALICE

Alice is a physiotherapy student and takes part in course exercises that explore the use of AI as part of physiotherapy practice. During the exercises, different rehabilitee situations are discussed, and the group reflects on how AI could be used to support rehabilitation.

Alice notices that AI-generated suggestions are not sufficient on their own but need to be considered in relation to the rehabilitee's situation and her own observations. In discussions, it is emphasized that decisions are ultimately based on the physiotherapist's own clinical judgment.

After graduating, Alice encounters situations in her work where AI is used in different ways. She follows developments in the field, participates in training when available, and discusses with colleagues how AI can be used responsibly.


3
AI QUALITY MANAGEMENT
#include <iostream>
#include <fstream>
#include <vector>
257.835.468
ON
OFF

AI quality **management**

3.1 | Prerequisites for the use of AI

Usability and trustworthiness of AI in physiotherapy

- AI systems should be intuitive and easy to use, and integrate with existing systems that physiotherapy professionals use
- AI-based functions must be reliable, transparent, traceable, and technically robust
- AI-based functions should produce consistent results in similar situations
- AI-generated information must be understandable, for example, in terms of what it is based on, and how the results are produced
- AI-generated information must be valid, meaning it accurately reflects the phenomenon and can be evaluated in relation to information produced by a physiotherapy expert
- When selecting AI, the requirements of the task must be considered, and its use and suitability must be evaluated for different patient groups, fields of physiotherapy practice, and operating environment
- Changes in AI systems over time must be considered as systems may evolve and some may learn from new data

3.2 | Evaluation of the use of AI

Continuous evaluation and development of AI use in physiotherapy

- The use of AI must be based on research evidence demonstrating its accuracy, safety, and effectiveness in a clinical physiotherapy context
- The use of AI requires continuous evaluation and ongoing development, based on systematic reflection on practice from multiple perspectives (rehabilitees, physiotherapists, organizations, and society)
- The development of research-based practice requires multidisciplinary and multimethod research that evaluates effectiveness, cost-effectiveness, user experiences, and perceived meaningfulness
- AI use must consider the sociotechnical system of AI, physiotherapy professionals, and rehabilitation clients, together with the physical, psychological, social, and cognitive conditions in which it operates
- The use of AI is supported by consistent rehabilitation pathways and workflows, as well as interprofessional and interdisciplinary collaboration within and between organizations
- Physiotherapists and rehabilitees provide regular feedback on the usability of AI and their user experiences. The collected information is used to continuously enhance AI-assisted physiotherapy services

4

PROPOSED ACTIONS FOR THE RESPONSIBLE USE OF ARTIFICIAL INTELLIGENCE (AI) IN PHYSIOTHERAPY AT THE ORGANIZATIONAL LEVEL

Proposed actions for the responsible use of Artificial Intelligence (AI) in physiotherapy at the organizational level

Organizational level

- Rehabilitee-centered factors
- Organizational models for the use of AI
- Responsible use of AI

Societal level

- AI implementation and evaluation
- Principles for AI use
- Support for private physiotherapy providers and self-employed practitioners
- AI competence
- Co-development of AI

4.1 | Rehabilitee-centered factors

The organization's AI guidelines define the principles of rehabilitee-centeredness in AI-assisted physiotherapy. This includes, for example:

- How rehabilitee participation, consideration of individual needs, shared decision-making, and access to understandable information are realized in AI-assisted physiotherapy
- How the use of AI is explained to the rehabilitee at the beginning of the interaction, throughout the physiotherapy process, and after physiotherapy, how AI-generated information is reviewed jointly with the rehabilitee, and how AI use is evaluated and, where necessary, tailored to the rehabilitee's goals, needs, and individual circumstances

The organization's AI guidelines describe how individual rehabilitee factors are considered in AI-assisted physiotherapy. This includes, for example:

- How is it ensured that the use of AI takes into account different linguistic and cultural contexts, diverse practice environments, and the individual characteristics, needs, and life circumstances of rehabilitees
- How is it ensured that the use of AI is based on a careful assessment of the rehabilitee's goals and preferences
- How it is ensured that the use of AI is applied differently to different patient, client, and rehabilitee groups
- How are AI-based interpreting and communication solutions utilized, and how is mutual understanding between the rehabilitee and the professional ensured
- How is the representativeness of the data used by AI evaluated and ensured in relation to the rehabilitees, practice environments, and phenomena for which it is used

4.2 | Operational models for the use of AI

The organization's AI guidelines describe the use of AI in referrals to physiotherapy. This include, for example:

- What is the role of AI, and how is it utilized in facilitating access to physiotherapy services and in the processing of referrals
- What principles guide the use of AI, and what are the roles of different stakeholders (rehabilitee, family members, professionals, stakeholders) in its use
- How AI is used to support guidance and counseling of the rehabilitee and the initial assessment of symptoms and functioning

The organization's AI guidelines describe consent for the use of AI and the service offered in physiotherapy. This include, for example:

- Where AI-related consent is recorded in the patient information system, how the consent is visible during the physiotherapy process, what the consent covers (specific consent), and how the consent can be withdrawn
- How the use of AI is discussed with the rehabilitee, how alternative approaches are offered, and what options for AI use are available in physiotherapy

4.3 | Responsible use of AI

The organization's AI guidelines describe factors related to the safe use of AI in physiotherapy. This include, for example:

- Who is responsible for acquiring and maintaining AI licenses in the organization, and how the organization's own copyrighted materials are handled when using AI
- What types of data may be processed in each AI system, which devices are used to access AI and process data, and how AI-generated data are stored and, when necessary, deleted
- What types of AI use are permitted within the organization, with descriptions clarified through concrete examples

The organization's AI guidelines address AI competence and risk management in physiotherapy. This includes, for example:

- How orientation to the use of AI is provided, how competence is ensured, how participation in training is enabled, and the extent of AI training included in the employer's offerings
- How AI-related risks are identified, assessed, and analyzed, what risk management measures are in place in the organization, and how the safe use of AI is monitored
- How feedback on the use of AI is collected, how its impact on physiotherapy practice is evaluated, and how staff AI competence is assessed

5

PROPOSED ACTIONS FOR THE RESPONSIBLE USE OF ARTIFICIAL INTELLIGENCE (AI) IN PHYSIOTHERAPY AT THE SOCIETAL LEVEL

5.1 | AI implementation and evaluation

National guidelines and operational models are developed to support the implementation and use of AI in physiotherapy

- The implementation of national AI recommendations is supported in practice
- Guidance for the responsible implementation and use of AI systems (e.g., purpose of use, risk level, clinical relevance in physiotherapy)
- Consistent principles for AI use are promoted across the public, private, and third sectors

National evaluation practices are prepared for the use of AI in physiotherapy

- The impacts and effectiveness of AI use are monitored (e.g., changes in rehabilitees' functioning, rehabilitation outcomes, and the flow of physiotherapy and rehabilitation processes)
- The safety of AI systems is evaluated (risk management, error situations, patient safety)
- The ethical use of AI is ensured (equality, non-discrimination, transparency)
- Continuous monitoring and reporting on the use of AI are carried out as part of the service system

National-level resources are considered in the implementation and use of AI

- The development and maintenance of up-to-date AI competence among physiotherapists is enabled
- The development of consistent practices is supported across wellbeing services counties and the private and third sectors
- The regional equality of digital infrastructure and technological readiness is promoted and ensured
- The opportunities of AI use as a support for physiotherapy practice are emphasized, not as a replacement for physiotherapists or physiotherapy

5.2 | Principles for AI use

Principles and responsibilities for the use of AI in physiotherapy are defined

- Ensure equality among rehabilitees and a rehabilitee-centered approach to AI-assisted physiotherapy
- Physiotherapists are required to be responsible for professional decision-making
- Service providers are required to be responsible for the implementation, use, and monitoring of AI
- Technology developers are required to be responsible for the safety, reliability and functionality of AI systems
- Technology developers are required to communicate clearly how compliance of AI systems is achieved and what certifications and standards have been granted to the AI system

Accessibility and equality in the use of AI in physiotherapy are considered

- The availability and accessibility of services are ensured, particularly for rehabilitees in vulnerable situations and those with lower digital capabilities
- Geographical and regional equality in access to services is ensured

The use of research evidence in the use of AI in physiotherapy is strengthened

- Cooperation between research, development, and innovation and practical work is supported
- Funding is directed to research that validates, develops, and implements AI systems (validation, intervention, and implementation studies)
- The quality, representativeness, and mitigation of bias in physiotherapy-related data are ensured
- The creation and utilization of open datasets related to the use of AI in physiotherapy are promoted

5.3 | Support for the use of AI

A national AI advisory service for physiotherapy is established

- Citizens' AI competence is supported
- Concrete support and examples are provided for the use of AI in a physiotherapy context
- Clear guidance is provided on legal responsibilities and obligations related to AI use (data protection, patient safety, allocation of responsibilities)
- The application of EU regulations (e.g., the AI Act, GDPR) is promoted in practical physiotherapy work
- The implementation and use of AI are especially supported among private physiotherapy providers and self-employed physiotherapists

Practical tools for the use of AI in physiotherapy are developed

- Checklists for assessing risks related to the implementation and use of AI are prepared
- Standardized guidelines and contract templates for the implementation and use of AI are prepared and regularly updated
- AI use self-assessment tools that are developed for different stakeholders (self-employed practitioners, private service providers, organizations, wellbeing services counties, and third-sector organizations)

The availability of AI advisory services in physiotherapy is ensured

- Nationwide low-threshold AI advisory services are made available
- Advisory services are provided especially for small and private physiotherapy providers

5.4 | AI competence

National policies on AI competence in physiotherapy are developed

- Levels of AI competence and competence descriptions for physiotherapists are defined
- National guidance on training content is established in accordance with consistent principles
- Equal opportunities to develop AI competence are ensured across regions
- AI competence is systematically integrated into the physiotherapy education system
  - In physiotherapy degree education
  - In continuing and postgraduate physiotherapy education

National education provision is developed to strengthen AI competence in the field of physiotherapy

- The ethical and legal foundations of AI use, as well as critically AI research literacy, are ensured
- Implementation competence in AI research is supported in practical physiotherapy
- Skills in the critical evaluation and application of AI systems are supported

Structures supporting continuous learning and competence development in the use of AI in physiotherapy are strengthened

- National funding models are established to support the continuous development, updating, and maintenance of AI competence among physiotherapists
- Open national learning materials are created to support self-directed learning in the use of AI
- The roles and responsibilities of employers and employees in maintaining and developing AI competence are described

5.5 | Co-development of AI

National structures for the co-development of AI in physiotherapy are defined

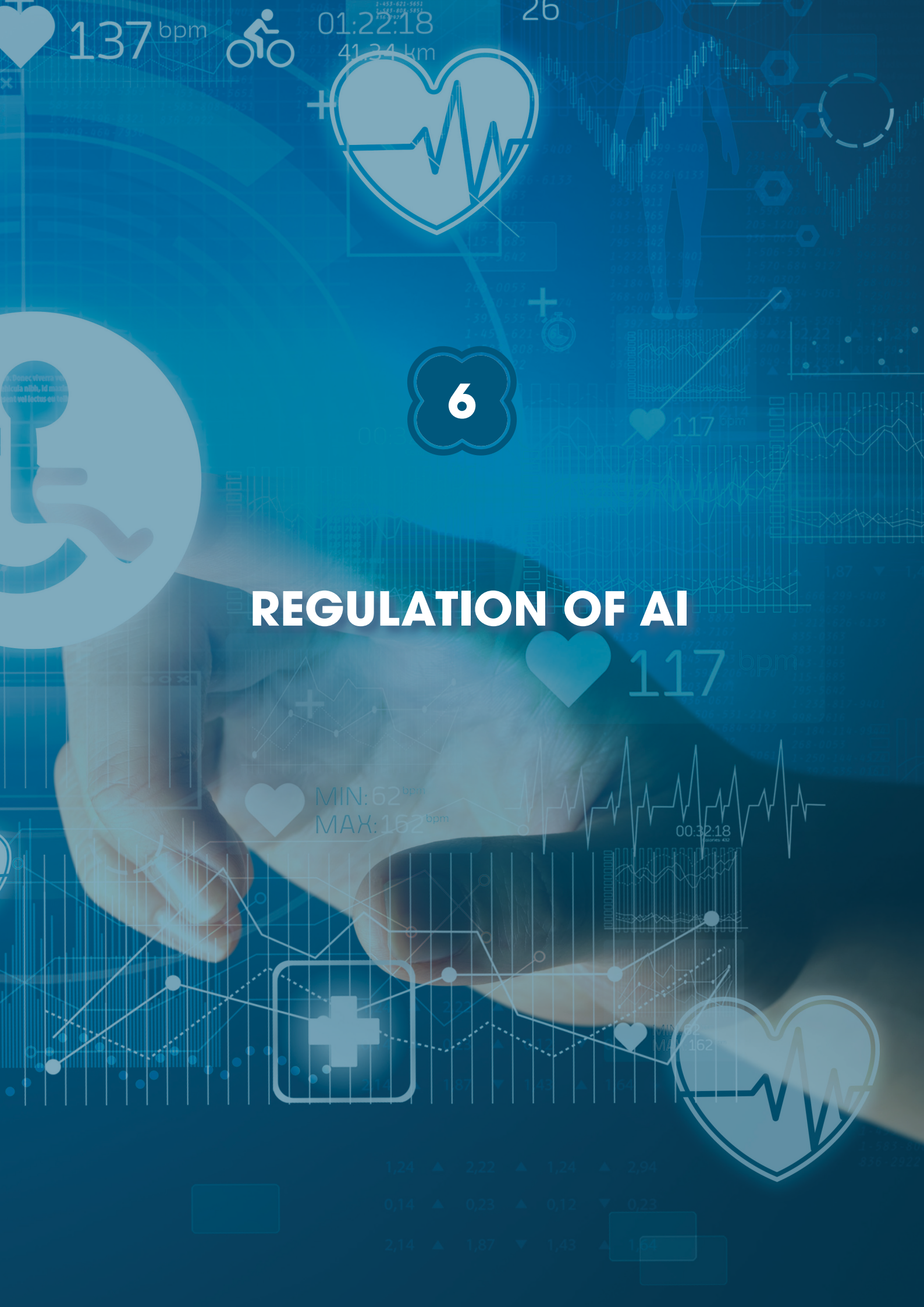
- Cooperation between physiotherapy, other health and social care actors, higher education institutions, research institutes, and technology providers is strengthened
- National networks, working groups, and pilot environments are created to support research, development, innovation, and competence activities in the co-development of AI

The co-development of AI in physiotherapy based on multidisciplinary expertise is enabled

- Physiotherapy and technology professionals, as well as other relevant multidisciplinary actors, are taken into account
- Rehabilitees, their families, significant others, and other key stakeholders are considered and involved
- Self-employed and small-scale providers, organizations, wellbeing services counties, and third sector actors are taken into account

The role of national actors in guiding the use of AI in physiotherapy is clarified

- National-level coordination of the use of AI in physiotherapy is recommended
- Structures that support implementation (tools, models, and theoretical frameworks) are created
- Equal consideration of different physiotherapy sectors is ensured, along with targeted support for self-employed and small-scale providers
- The use of AI systems that operate transparently and produce consistent, explainable results is recommended



6

REGULATION OF AI

Regulation of AI

The use of artificial intelligence in physiotherapy is governed by several laws, regulations, and directives. In the preparation of these guidelines, the regulatory framework presented in Tables 2 and 3 has been examined. In summary, the main regulatory principles largely derive from European Union legislation, which is complemented by national regulations.

TABLE 2 | **EUROPEAN UNION–LEVEL REGULATION GOVERNING THE USE OF AI IN PHYSIOTHERAPY**

Key EU-level regulation	Regulation (EU) 2017/745 on medical devices (MDR)
	Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (AI Act)
	Regulation (EU) 2016/679. (GDPR)
	European Health Data Space Regulation (EHDS)
	Medical Devices Directive (93/42/EEC)

TABLE 3 | **FINNISH NATIONAL-LEVEL REGULATION CONCERNING THE USE OF AI IN PHYSIOTHERAPY**

Key national-level regulation	Act on the Processing of Client Data in Healthcare and Social Welfare (the Client Data Act, 703/2023)
	Act on the Supervision of Certain Artificial Intelligence Systems (1377/2025)
	Medical Devices Act (719/2021)
	Act on the Status and Rights of Patients (785/1992)
	Act on Electronic Communications Services (917/2014)
	Act on the Protection of Privacy in Working Life (759/2004)
	Decree of the Ministry of Social Affairs and Health on the Processing of Client Data in Social and Health Care (457/2024) [in Finnish]
	Copyright Act (404/1961)
	Health Care Act (1326/2010)
	Data Protection Act (1050/2018)
	Employment Contracts Act (55/2001)

CASE EXAMPLE | THE USE OF AI IN NEUROLOGICAL PHYSIOTHERAPY

Martin seeks neurological physiotherapy due to chronic stroke. His functioning is limited by right-sided muscle weakness, balance difficulties, and challenges in daily living activities. During the appointment, physiotherapist Kate introduces the possibility of using an AI assistant integrated into the patient information system as part of the physiotherapy process. AI can be used to support documentation and clinical reasoning, but Kate emphasizes the outset that responsibility for physiotherapy and decision-making always remains with the professional. This is based on the Health Care Professionals Act (559/1994), which obligates practitioners to act in the patient's best interest and to be accountable for the implementation of care.

Kate asks Martin for consent to use AI and explains that consent is voluntary and can be withdrawn at any time. She also makes it clear that refusal will not affect the quality or delivery of care. This ensures the patient's right to participate in decision-making regarding their own rehabilitation (Act on the Status and Rights of Patients 785/1992). At the same time, the requirements of the EU General Data Protection Regulation (GDPR 2016/679), which mandates transparency in the processing of personal data, are fulfilled. Kate clearly and understandably explains what data the AI processes and how it is used. She states that the AI supports, for example, structuring the initial interview, identifying factors affecting Martin's functioning, and clinical documentation. Kate also explains how data protection is ensured in Martin's case and how data are processed securely in accordance with the Act on the Processing of Client Data in Social and Health Care (703/2023), the Data Protection Act (1050/2018), and the GDPR. In addition, Kate emphasizes that the AI does not make independent decisions but functions as a support tool for the professional. This is consistent with the key principle of human oversight in the European Union's AI Act (2024), particularly in high-risk applications such as health care.

Martin feels that he has received sufficient information and gives his consent. The AI assistant is then introduced as part of the appointment. Kate conducts a comprehensive assessment of Martin's situation, taking into account the effects of the neurological condition on functioning, mobility, and participation in daily life. The assessment focuses on motor, sensory, and cognitive factors, as well as balance and gait.

In addition, Kate carries out a physiotherapy examination, including the assessment of muscle strength, analysis of balance and gait, and functional testing. During the examination, she evaluates the findings in relation to current research evidence, Martin's individual situation, and his own experience of symptoms. This reflects the obligation of health care professionals to practice competently and in accordance with evidence-based principles, as well as to maintain and develop their professional competence (Health Care Professionals Act 559/1994, Sections 15 and 18).

Based on the assessment and Martin's individual preferences, a shared understanding of his situation and the need for physiotherapy is established. Kate and Martin jointly set goals for rehabilitation, supporting the patient's right to participate in the planning of care and decision-making (Act on the Status and Rights of Patients 785/1992, Sections 4–6). The goals relate, for example, to improving walking ability, strengthening balance, and facilitating coping in daily life. Kate provides an individually tailored exercise program based on key principles of neurological rehabilitation, such as task-specific training and motor learning. AI is utilized particularly to support documentation and appointment scheduling, in accordance with regulations governing the processing of client data.

At the end of the appointment, Kate and Martin critically review the AI-generated visit summary. Kate compares the summary with her own clinical observations, examination findings, and Martin's experiences. This step is essential for ensuring safety and the accuracy of information, which are core responsibilities of health care professionals. The AI produced a largely accurate summary, but some inaccuracies were identified in the documentation, which Kate corrects before approving the record. This illustrates the physiotherapist's obligation to ensure the accuracy, diligence, and safety of clinical documentation (Health Care Professionals Act 559/1994, Section 15; Act on the Processing of Client Data in Social and Health Care 703/2023, Sections 17 and 90).

Overall, clinical reasoning emerged as a combination of the physiotherapist's expertise, Martin's experiential knowledge, and the informational support provided by AI. The AI particularly supported the structure of information and documentation, enabling a smoother appointment and allowing greater focus on a comprehensive assessment of the rehabilitee's situation.

DISCUSSION

One of the main outputs of the research project was the development of evidence-based guidelines and proposed actions for the responsible use of AI in physiotherapy in Finland. The guidelines highlighted the importance of human-centeredness, responsibilities and obligations related to AI use, competence development, recognition of potential benefits, and quality management. The action proposals focused primarily on the organizational and societal levels, underscoring the crucial role of structures and operating models in enabling the responsible adoption and use of AI.

Guidelines and Proposed Actions for the Responsible Use of Artificial Intelligence (AI) in Physiotherapy in Finland are based on the preliminary findings of four sub-studies within the research project (a literature review, a survey, interviews, and a Delphi expert panel). Based on the results of these sub-studies, the first draft of the guidelines was prepared in spring 2026, and feedback was obtained from 11 physiotherapy experts during a stakeholder consultation [8]. The comments and development suggestions from the stakeholder consultation and collaborating partners were considered in this first version of the document *Guidelines and Proposed Actions for the Responsible Use of Artificial Intelligence (AI) in Physiotherapy in Finland.* The figure presented in the appendix depicts the phased and cumulative progression of the research project.

Research-based guidelines on artificial intelligence and the associated proposed actions are of both national and international significance. Findings from a document analysis of international AI guidelines in physiotherapy conducted as part of the research project indicated that previously published English-language guidelines have not been systematically grounded in research evidence. Furthermore, only limited use was made of scientific research specific to the field of physiotherapy [27]. International research on artificial intelligence in physiotherapy has predominantly focused on the application of AI in clinical practice [28] and on its potential to support and strengthen the clinical reasoning of physiotherapy students [6]. In contrast, the present research project sought to explore how AI can be leveraged more broadly as a professional tool across physiotherapy practice, leadership, education, research, work organization, and the development of AI-related expertise and work cultures within the profession. Consideration was also given to leadership and work organization across the different career stages of physiotherapists.

Research examining physiotherapists' use of artificial intelligence in both clinical practice and administrative work remains scarce internationally [29-30] as well as nationally [31,32,33]. Moreover, future expectations concerning the application of AI in physiotherapy appear to have received relatively little attention in the existing literature [34,35].

Our findings suggest that AI competence in physiotherapy should be understood as a comprehensive and multidimensional competence domain that goes beyond the acquisition of individual technical skills and forms part of a broader ecosystem that enables the effective use of AI. This perspective has not been incorporated into the Finnish core competence descriptions for physiotherapists published in 2016 [36]. Given the growing importance of AI, its influence is already evident across multiple areas of physiotherapists' work, including clinical practice, administrative tasks, leadership, work organization, education, and research, development, and

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innovation (RDI) activities [8,37].

Importantly, the findings of the literature review suggest that the potential added value of AI, as well as its effectiveness and cost-effectiveness, warrant greater attention in physiotherapy research. For example, evidence remains limited regarding the effects of using AI as a professional tool on the professional competence development, work practices, productivity, perceptions of work meaningfulness, well-being at work and workplace culture of practicing physiotherapists, particularly in randomized controlled trials.

The first revision of the Guidelines and Action Proposals for the Responsible Use of Artificial Intelligence is scheduled for completion in autumn 2027. Furthermore, the findings of the research project will be reported in international peer-reviewed journal articles. A detailed description of the evidence-based process used to develop the guidelines and action proposals, including the project's sub-studies, is provided in the final report available on the website of the Finnish Work Environment Fund: link

Tekoälyä (Microsoft Copilot) hyödynnettiin suositusten tekstisisältöjen jäsentelyssä ja kielenhuollossa. Dokumentissa esitetyt esimerkkitarinat tuotettiin tekoälyn avulla ja muokattiin hankkeen tutkijoiden toimesta lopulliseen muotoonsa.

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APPENDIX 1 | RESEARCH-BASED DEVELOPMENT OF GUIDELINES AND PROPOSED ACTIONS

The phased, research-based progression of the "Artificial Intelligence in Physiotherapy" research project from sub-studies 1-4 to the development of national AI guidelines for physiotherapy and related proposed actions.

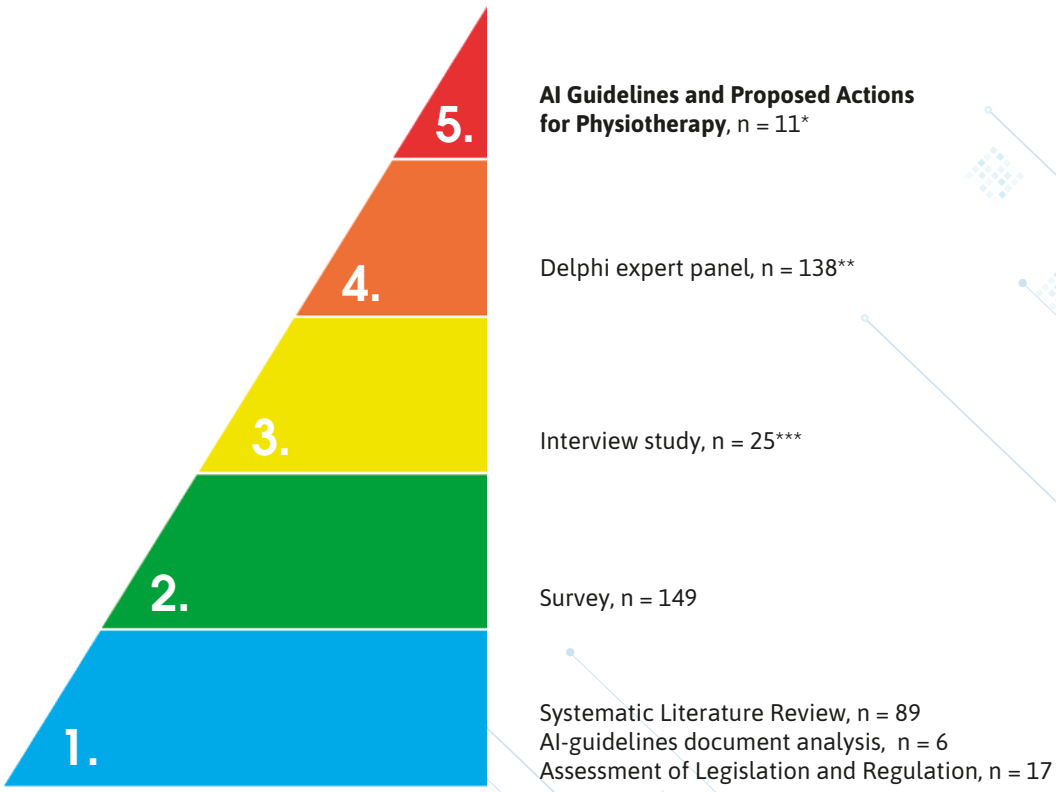

Figure 1. Phased progression of the research project "Artificial Intelligence in Physiotherapy." * Comments on the AI recommendations were obtained from 11 physiotherapy experts. ** First Delphi round: 75 panelists; second round: 63 panelists. *** Two focus group interviews: 8 informants; individual interviews: 15 informants.