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КУРСОВА РОБОТА

З ПЕРЕКЛАДУ

**ОСОБЛИВОСТІ ПЕРЕКЛАДУ ФАХОВОЇ МОВИ PHYSIOTHERAPY НА
УКРАЇНСЬКУ**

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INTRODUCTION

The term paper is intended to cover languages for special purposes in the field of physiotherapy, its peculiarities and particularities. It focuses on the specifics of translating such a language, namely the challenges and methods of rendering terminology inherent in that language, as well as ways of conveying grammatical and syntactic features that are commonly used in this language.

The language for special purposes has been and remains of considerable interest to linguists. Its essence and distinctive features are described in the works of Hofmann, Schmidt, Roelke, and Beier. The difficulties of translation have also been the subject of research and remain relevant for further studies. The issue is addressed in the works of such linguists as Kiyak, Ababilova, Karaban and others.

As medicine is constantly evolving as a science along with the pursuit of improving the quality of medical services, interest in physiotherapy is also increasing. In today's globalised world, there is also a growing demand for international communication, exchange of knowledge, experience and new discoveries in the field of physiotherapy. Understanding the peculiarities of translation from English into Ukrainian of the language for special purposes of physiotherapy is one of the necessary steps towards developing this field in Ukraine.

The aim of the term paper: to describe possible translation methods and transformations for translating the language for special purposes of physiotherapy.

To achieve this goal, the following **objectives** need to be addressed:

- identify the grammatical features of the language for special purposes of physiotherapy;
- analyse possible translation transformations at the lexical level;
- analyse possible translation transformations at the sentence level.

Subject of the research: terminology and grammatical constructions inherent in the language for special purposes of physiotherapy.

Object of the research: translation transformations at the lexical and sentence levels.

To achieve this goal, the descriptive and comparison **methods** were used.

The theoretical and practical value of the course work is to deepen the knowledge of the peculiarities of translating the language for special purposes of physiotherapy.

The term paper consists of nine parts: contents, introduction, two chapters, conclusions, bibliography, list of reference sources, list of data sources, annex with illustrative material and resume. The first chapter contains a theoretical overview of specialised languages and a review of literature on specialised language translation. The second chapter contains an analysis of translation transformations based on illustrative material taken from articles about physiotherapy.

CHAPTER 1

LANGUAGE FOR SPECIAL PURPOSES AS AN OBJECT OF LINGUISTIC RESEARCH

1.1. Definition of the term 'language for special purposes'

Language for special purposes is a set of linguistic means used in a particular professional field. It includes terms, professional vocabulary, syntactic and stylistic constructions, phonetic and morphological means. [25: 15] Language for special purposes is a part of the general language, therefore it is classified as a sub-language. It is a part of the common language, although it has its own peculiarities, which are related to the specifics of the professional sphere. The term began to be widely used in the 60s and 70s of the last century.

A professional language is an important tool that facilitates effective communication in specific areas. It allows people to convey information more accurately and clearly, as well as to avoid misunderstandings. Within the system of professional languages, a number of other subtypes of professional languages can be included, including medical language, business language, IT language, legal language, aviation language, etc. The emergence of such a language is the direct response to the need to transmit certain information, in other words, to communicate.

We believe it is necessary to note that there is no generally accepted definition of the term. While Ukrainian scholars use the term 'фахова мова' to denote the specialised language, English and American linguistics employ the broader term 'language for special purposes.' We suggest that 'фахова мова' emphasises the professional context and expertise associated with the language, while 'language for special purposes' focuses more on the functional characteristics.

As a linguistic phenomenon, this sublanguage has been the subject of research by such linguists as L. Hoffmann , J. Humbley, T. Rölke and many others. Their works examine the theoretical and practical foundations of this sublanguage.

Despite the enduring interest in the concept of languages for special purposes (LSPs) and their unique characteristics, as evidenced by a large number of studies, these sublanguages remain an inexhaustible source of linguistic interest and require further research. The rapidly developing field of linguistics has witnessed a surge in research that examines the emergence and evolution of LSPs in various spheres of human activity, including economic, industrial, scientific and other fields. However, the search for a definitive and generally accepted conceptualisation of a "language for special purposes" remains an urgent problem.

The variety of definitions of "professional language" stems from the different approaches that linguists opt for when studying its operationalisation. For instance, some linguists define "professional language" based on its specialised vocabulary, while others emphasise its characteristic grammatical structures, contributing to the ongoing definitional debate.

The development of the studies of language for special purposes has occurred in several stages.

The study of language for special purposes at the beginning of the twentieth century was primarily devoted to terminological research, namely the study and exploration of specialised vocabulary used by representatives of various trades and professions. Early 20th-century research on language for special purposes primarily focused on vocabulary, but later on, attention was shifted to syntax. The Prague School's emphasis on functional sentence structure, pioneered by Vilém Mathesius, contributed to the growing interest in syntax within LSP research. [26: 28]

Research has shown that a specialised text cannot be understood by knowledge of vocabulary alone. For its adequate analysis, it is also necessary to take into account syntactic, stylistic and pragmatic features. Thus, at this stage, scholars were mostly interested in the morpho-syntactic and grammatical features of language for special purposes.

The early 1980s saw the focus of researchers' attention shift from the lexical to the syntactic and functional-stylistic level to the textual level of specialised discourses. This, in turn, led to the emergence of a new discipline of linguistics, namely LSP text linguistics (Kalverkämper, Hoffmann and others).

At the beginning of the 1990s, a paradigm shift in the analysis of specialised communication took place, when sociocultural and semiotic considerations began to be taken into account alongside established pragmatic and communicative factors. As Kalverkemper argues, the complex interweaving of these elements requires a holistic approach to effectively navigate the complexities of specialised communication. [28: 103]

As attention to generic distinctive features, including the broader social context of LSPs, has grown, a thriving stream of research has emerged with a focus on such features as the accessibility and comprehensibility of LSP texts, the cognitive mechanisms underlying their production, reception, and comprehension, their media forms, their ideological underpinnings, and so on. A wide range of pragmatics has thus been used to reflect the complexities of these newly discovered features of LSP.

The German linguist Lothar Hoffmann was one of the first scholars to define a language for special purposes in his 1969 work "Character and gesellschaftliche Bedeutung der Fachsprachen". According to the researcher, language for special purposes is 'a set of all linguistic means used in a specially defined communicative sphere in order to achieve understanding between all specialists in a particular field'. [8: 53] Ukrainian linguist T. Kyiak also believed that "this definition should be

supplemented by the fact that the functioning of a particular language for special purposes is ensured exclusively by clearly defined terminology" [6: 205]

T. Kyiak defined the professional language as "a set of all linguistic means used in a professionally closed sphere of communication in order to ensure mutual understanding between people working in this area". [8: 55] The definition given by the scientist reveals an implicit adherence to the notion that professional vocabulary and terminology could be synonymous. However, this perspective did not find universal acceptance within the Ukrainian linguistics community. Notably, Z. Symonenko differentiated between the two concepts. [16: 46]

Schmitt stated that language for special purposes is "a means of optimal mutual understanding of a subject area for specialists". According to him, this language is characterised by specific vocabulary, as well as special norms for the choice and use of commonly used lexical and grammatical means. [30: 17]

Various distinguished linguists, in particular R. Bayer, have proposed their own definitions of the professional language. The scientist stated that this sublanguage is "a complex sphere of linguistic application, which, conditionally, due to the specifics of various professional situations, indicates to internal differentiation" [21: 12]

Australian linguist Halliday, on the other hand, advocated the notion by which language for special purposes does not feature any distinctive grammatical structures that are not represented in other language subsystems. He also claimed that "a professional language differs from a general language in the statistical distribution of grammatical structures" [23: 17]

With languages for special purposes being rich in professional vocabulary, including terms, we believe it is necessary to define this linguistic phenomenon. A

term is "a single word or collocation that means a specifically defined special concept in any field of science, technology, art, social life, etc." [30: 1444]

Research demonstrates that analysing languages for special purposes solely through vocabulary is insufficient. Understanding and mastering professional syntax and stylistics is also necessary, as these fields often utilise common language elements more frequently or in unique ways. A number of specialised fields often use elements of the general language, but in a different context and with a different meaning. Unless one recognises these extended meanings, the true meaning of the specialised language may remain obscured. While this doesn't necessarily mean general language and language for special purposes have entirely distinct grammars or styles, it reveals their unique character within the broader landscape of language. [15: 6]

The linguist R. Bayer promoted the idea that analysing specialised languages effectively requires examining the intricate interplay of vocabulary, grammar, and usage and claimed that languages for special purposes are more than just lexical changes in the language system. [21: 13] The scientist believed that language for special purposes comprises a set of commonly used linguistic means and reveals characteristic features on the lexical, morphological and syntactic levels. [21: 13]

1.2. Theoretical aspects of language for special purposes translation

The lexical composition of the language for special purposes involves industry-specific terms, interdisciplinary and general scientific terms, professionalisms, jargon, general vocabulary and nomenclature. [10: 434] One of the main features of such a language is the use of specific vocabulary to refer to concepts and phenomena in a particular field. This vocabulary is often formed from commonly used words using various word-formation means. Translation of LSP texts depends on the lexical and grammatical features of such texts, as well as the context.

There is a common belief among linguists that the process of translating texts of a language for special purposes is as complex and challenging as translating literary texts. Translation requires not only an accurate reproduction of the original text using the means of the target language, but also the preservation of style and meaning. One of the main targets in translating such texts is to convey the information accurately and unambiguously. [13: 300]

Within the variety of translation difficulties, lexical problems are identified as the main obstacle faced when translating LSP texts. The most common challenges for translators when working with such texts are, according to many researchers, the lack of equivalents of terms in the target language and ambiguity of terms. In case the meaning of a term in the translated text is distorted, such a mistake is bound to create a misrepresentation of the meaning intended in the source text. [7: 154] If the translation of medical texts is inaccurate, for example, it can have negative consequences for the recipients of such texts, i.e. patients, affecting both their health and their well-being.

The key characteristics of a term-phrase are its repetitiveness in the professional sphere and the ability to express a precise concept. However, it is important to remember that its stability is limited to a certain terminology system and that outside of a certain terminology system such a phrase will not be stable and will not be perceived as an integral linguistic unit. [20: 64] Consequently, the issue of translating LSP texts remains a relevant one and is under extensive scientific interest as well as research. At the current stage of this field's development, a number of translation techniques and methods have been proposed by linguists that can be used to ensure adequate and high-quality translation of such texts and terms.

Several authors have explored the intricacies of professional language translation, including A. Kovalenko in his seminal work "General Course of Scientific and Technical Translation" and V. Karaban in "Translation of English

Scientific and Technical Literature." In these studies, linguists thoroughly analyse the complexities involved in translation, focusing on the grammatical problems that arise when translating professional language and terminology. In addition, they explore the complex interplay of lexical, terminological, genre and stylistic nuances that are crucial for the effective reproduction of such texts in the target language.

Linguist T. Kyiak, who has studied the problems of LSP text translation, believes that the main difficulty in working with such texts is to translate the meaning of each phrase, since such a phrase does not always have a literal translation in the target language. [7: 3] In addition, he makes a valid point that "a translator must have at least some knowledge of the subject matter of the texts being translated, which is also acquired with experience", and that "misleading terms should be avoided in the translation text if there are synonyms with a more motivated internal form in a particular thermosystem". [7: 3]

Ababilova N.M. and Bilokaminska V.L. also note that the process of translating terms of professional language texts consists of two stages: determining the meaning of the term in the context and reproducing its meaning in the target language. [1: 1] Translators may resort to lexical equivalents of terms, if any are present in the target language. Lexical equivalent refers to a constant lexical correspondence that is exactly the same as the meaning of a word. [2: 30]

When dealing with LSP texts, in particular, when translating terms and professionalisms, the most efficient option is to use terms officially approved by the relevant state standards, as linguists, including T. Kiyak, advise. In case of absence of a term in any of the official dictionaries, a translator should resort to reference books on the subject or consult with the specialists of the field of the text being translated in order to decide upon a suitable term. [7: 4]

Translators frequently find it necessary to create new terms in the target language because there are no equivalent terms for some concepts used in the source

language. As a result, neologisms appear, which constitute a significant part of the vocabulary in such translations. [1: 1]

The techniques used to translate terms include transcription and transliteration (transcoding), translation with borrowings, descriptive method, and incrustation. [11: 74]. Current trends, as highlighted by Maksymov [11: 74], favour "practical transcoding" in contemporary translation practice. This technique means that the letter-by-letter or phoneme form of a source language word is simply transcribed using the alphabet of the target language. Maksymov posits several justifications for this preference. For one thing, the target language may not have equivalents or well-established terms for the concepts denoted in the source language. Second, transcoding provides a more concise alternative to long descriptive explanations.

Furthermore, Maksimov remarks that there has been a recent increase in translators' interest in incrustation. According to this translation method, the translator renders the term in the letters of the source language. [11: 74] While the technical aspects of incrustation are important, its use requires thorough consideration of several factors. Translators should be mindful of the potential ambiguity or confusion that can arise from the use of letters from the source language in the translation.

Apart from other lexical difficulties that a translator may encounter when translating professional languages, particularly in medical discourse, eponyms are also notable. [18: 275] An eponym is "the name of a thing, process or function formed on behalf of a person". [3: 354] In medical language, an eponym refers to a phenomenon (e.g., a disease) named after the person who first discovered or described it. The challenge in translating such terms is that not all equivalents of such eponyms in the target language can also be eponyms. Although there are such cases of equivalence, for example, the Ukrainian equivalent "хвороба Паркінсона" of the term "Parkinson's disease" is also an eponym. As a matter of practice, eponymic

terms tend to be used when there is no adequate term to describe a complex phenomenon. [19: 314]

In the field of professional translation of texts, practitioners have identified another equally problematic lexical obstacle: abbreviations. After analysing the translation of professional website content, Sitko A. and Struk I. found that in some cases it is not enough to provide a descriptive translation of an abbreviation, but rather to add the necessary information for the recipient to fully understand the context. [14: 68] This idea is reinforced by Ishchenko T. V., who, studying typical mistakes in professional translation of texts, emphasises the fact that an inaccurate translation of abbreviations is inadmissible. Such a mistake might not only distort the meaning of the text, but also significantly impede comprehension. [4: 332]

The presence of stylistic clichés in professional language texts, such as business correspondence, requires special attention when translating. Although there may be direct equivalents in the target language, which simplifies the translator's task, M. Chepurna aptly emphasises the inherent complexity of English clichés. [17: 206] In such cases, the translator has to resort to subtle grammatical transformations, as well as strategies such as converting the sentence into a subordinate clause of the reason or elucidate subordinate clause. It has to be noted that successful work with stylistic clichés in professional translation requires more than just knowledge of the language. It requires a deeper understanding of cultural nuances, idiomatic expressions and the complexity inherent in the language itself.

Beyond the lexical difficulties and the challenge of finding accurate equivalents for specialised vocabulary, translation of LSP texts requires due attention to grammatical features. This is particularly crucial given the prevalence of impersonal sentences and constructions in professional texts. Since professional texts often describe processes and achieved states, passive constructions are often found in such texts. [12: 86]

Furthermore, the translation of constructions like Complex Objects can present significant challenges for translators due to their inherent non-equivalence in Ukrainian [14: 69] Consequently, translation transformations may be necessary to achieve a clear and accurate translation. This may include sentence fragmentation, introducing conjunctions, or a total reorganisation of the sentence. Translators must have a thorough understanding of the nuances of the source and target languages to ensure that translated sentences retain their original meaning and grammatical coherence.

3. Peculiarities of scientific discourse

I. Shevchenko defines discourse as a cognitive and communicative activity that takes place in a broad socio-cultural context, is a combination of process and result, and is characterised by continuity and dialogicity. [18: 28] O. M. Hnizdechko interprets the phenomenon of discourse as "text in the aspect of events" as well as a system of hierarchies of meanings, which, similarly to text, possess required for communication linguistic and extra-linguistic qualities. [3: 13]

The language of physiotherapy can include scientific articles, research, medical textbooks, treatment protocols, patient information bulletins, etc. Therefore, it can be referred to as a scientific discourse.

Robert A. Day and Nancy Sakaduski argue that the main purposes of scientific texts are firstly to "educate", then to "inform" the recipient and also to "record" [22: 1]

Scientific discourse texts are characterised by specific lexical peculiarities. One of the peculiarities of texts of scientific discourse, according to Maksimov, is the large number of specialised terms. [11: 71] The field of physiotherapy draws heavily upon various scientific disciplines, including anatomy, physiology, and biomechanics, necessitating precise terminology for muscles, bones, movements, and

interventions. This can be challenging for non-specialists but ensures clear communication within the field.

Beyond the abundance of specialised terms, Maksimov also underscores the extensive use of neologisms as well as foreign words which are important lexical features of the field. Often these foreign are of Latin or Greek origin, due to the fact the foundation of medical and anatomical terminology lies in Greek and Latin. [11: 71]

Given that scientific discourse focuses on the processes and actions under study rather than on the individual researchers who carry them out, passive voice and impersonal constructions are often employed. [12: 86] Furthermore, the scientific writing style is characterised by the extensive use of the imperfective verb form, while the perfective form appears less frequently. [3: 40]

TEXT ANALYSIS

The importance of body positioning ('stirring up' patients) was reported as early as the 1940s. To simulate the normal perturbations that the human body experiences in health, the patient who is critically ill needs to be positioned upright (well supported) and rotated when recumbent. These perturbations need to be scheduled frequently to avoid the adverse effects of prolonged static positioning on respiratory, cardiac, and circulatory function. Other indications for positioning include the management of soft tissue contracture, protection of flaccid limbs and lax joints, nerve impingement, and skin breakdown. The efficacy of two-hourly patient rotation which is common in clinical practice has not been verified scientifically. Bed design features in critical care should include hip and knee breaks so the patient can approximate upright sitting as much as can be tolerated.

Heavy care patients such as those who are sedated, or have overweight may need chairs with greater support such as stretcher chairs. Lifts may be needed to

change a patient's position safely. In sedated patients other treatment modalities than body positioning are often not considered. Rehabilitation was considered as contraindicated, 'mainly due to sedation and renal replacement, in more than 40% of the ICU days of critically ill patients. However, other treatment modalities, such as passive cycling, joint mobility, muscle stretching and neuromuscular electrical stimulation, may not interfere with sedation of the patient or renal replacement therapy.

Passive stretching or range of motion exercise may have a particularly important role in the management of patients who are unable to move spontaneously. Studies in healthy subjects have shown that passive stretching decreases stiffness and increases extensibility of the muscle. Continuous passive motion (CPM) prevents contractures and has been assessed in patients with critical illness subjected to prolonged inactivity. In critically ill patients, 3 times 3 hours of CPM per day reduced fiber atrophy and protein loss, compared with passive stretching for 5 minutes, twice daily. For patients who cannot be actively mobilized and have high risk of soft tissue contracture, such as following severe burns, trauma, and some neurological conditions, splinting may be indicated.

The application of exercise training in the early phase of ICU admission is often more complicated due to lack of cooperation and the clinical status of the patient. Recent technological development resulted in a bedside cycle ergometer for (active or passive) leg cycling during bed rest (figure 3a). The bedside cycle ergometer (figure 3b) may allow prolonged continuous mobilization with rigorous control of exercise intensity and duration. Furthermore, the training intensity can be continuously adjusted to the patient's health status and the physiological responses to exercise. A recent randomized controlled trial of early application of daily bedside (initially passive) leg cycling in critically ill patients showed improved functional status, muscle function and exercise performance at hospital discharge compared to patients receiving standard physiotherapy without leg cycling.

In patients unable to perform voluntary muscle contractions, electrical muscle stimulation (EMS) has been used to prevent disuse muscle atrophy. A slower muscle protein catabolism and increase in total RNA content were also seen after EMS in patients with major abdominal surgery. In acute critically ill patients not able to move actively, a reduction of muscle atrophy and critical illness neuropathy was observed when using EMS. EMS of quadriceps in patients with protracted critical illness, in addition to active limb mobilization, enhanced muscle strength and hastened independent transfer from bed to chair. (PICU: 67-69)

The text under analysis is an extract of the scientific article "Physiotherapy in the intensive care unit" published in the Netherlands Journal of Critical Care in April 2011, written by Rik Gosselink, Beatrix Clerckx, Cristophe Robbeets, and Tine Vanhullebusch. The text depicts the real world, in particular, it discusses the importance of patient positioning and early mobilisation techniques to improve outcomes in critically ill patients, therefore it is classified as an artefact text.

The original article also features extra-linguistic means, such as photographs of patients and examples of the use of devices in physiotherapy, as well as a diagram showing different airway clearance techniques and a medical protocol chart.

The communicative intention of the text is to inform the reader on the benefits of positioning and early mobilisation techniques for improving the health of critically ill patients, providing an overview of the evidence to support their efficiency. The communicative intention is implemented through the factual evidence, references to research, and the use of special literary vocabulary, tropes and figures of speech and colloquial vocabulary, as follows:

1. Terms:
 - a. Terminology related to body positioning: stirring up patients, upright positioning, recumbent, two-hourly rotation, hip and knee breaks;

- b. Terminology related to treatment modalities: passive cycling, joint mobility, muscle stretching, neuromuscular electrical stimulation, passive stretching, continuous passive motion, splinting, exercise training, bedside cycle ergometer;
 - c. Other medical terminology: sedation, renal replacement therapy, soft tissue contracture, muscle atrophy, critical illness neuropathy, fiber atrophy, muscle protein catabolism, rehabilitation, lax joints, flaccid limbs, nerve impingement, skin breakdown, quadriceps.
2. Highly literary vocabulary: perturbations, impingement, efficacy, modalities, atrophy, extensibility, splinting, rigorous, enhanced, hasten, assessed, interfere;
 3. Acronyms: ICU (Intensive Care Unit), CPM (Continuous Passive Motion), EMS (Electrical Muscle Stimulation).

Considering that this article belongs to a scientific discourse, texts of which are characterised by a limited usage of tropes and figures of speech, the text does not contain an extensive number of such lexical units. Still, the following tropes and figures of speech are present in the text:

1. Metaphor: "stirring up" patients;
2. Euphemism: heavy care patients;
3. Epithets: important role, critically ill patients.

Given the formal style of the text, it does not contain any colloquial vocabulary such as slang or jargon. Nevertheless, some examples of professional words (professionalisms) can be found in the text, including: recumbent, contracture, impingement, atrophy, modalities, mobilization, rehabilitation, functional status.

The stylistic features of this text correspond to the characteristics of scientific discourse. The language of the text is formal and concise. Informativeness, which is the purpose of scientific discourse texts, is ensured by the extensive use of specialised

terminology, evidence and references to other studies. The original text includes subheadings to effectively organise information and enhance comprehensibility.

CHAPTER 2

LEXICAL AND GRAMMATICAL ASPECTS OF TRANSLATING TEXTS OF THE LANGUAGE FOR SPECIAL PURPOSES

This section focuses on the lexical and sentence-level aspects of translating professional language texts. In particular, we consider translation transformations.

2.1. Translation transformations at the lexical level

In the process of analysing the terminology and its equivalents, twenty-five terminological units were selected.

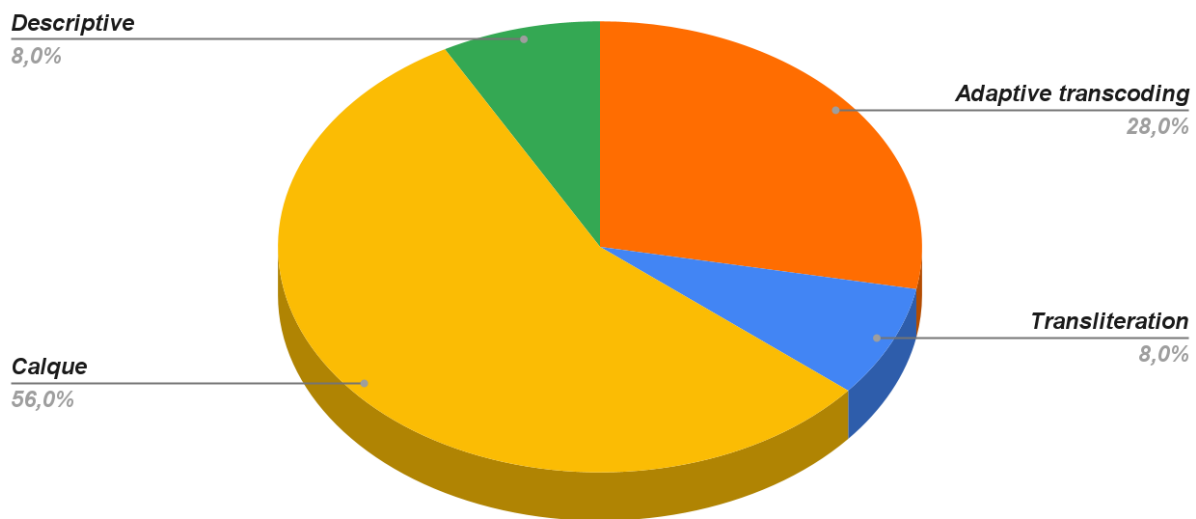
Transformation of calque appeared to be the dominant translation method as it accounted for 56% of all others. This method of translation also enables the reproduction of terms while preserving their meaning, since it involves rendering each term element using their equivalents in the target language.

Adaptive transcoding constituted a smaller share as it accounted for 28%. This is due to the fact that a lot of medical terms are of Latin origin, and such terms are often translated into another language by this means. However, not all the terms can be simply transliterated due to the difference between English and Ukrainian grammar. Therefore, they frequently have to be adapted to the norms of the target language and that is why adaptive transcoding is applied in such cases.

Transliteration proved to be less frequently used, as it accounted for 8%. Transliteration is used when rendering terms having the same meaning in different languages, however it is not always the case.

The descriptive method represented the same share as transliteration, with only two cases of use. This translation method is challenging and time-consuming, as it requires the translator to provide a concise descriptive rendering of terms that may not always be simple. Moreover, in some cases, this method does not fully capture the meaning and is less precise and reliable than the previous methods.

Diagram 1: possible translation transformations at the word level



2.1.1. Translating terms by means of transliteration and adaptive transcoding

Translation by means of transliteration. As a rule, transliteration is applied in cases of absence of a corresponding term in the target language or in case the term originates from Latin or Greek.

The term *hypoxemia* is translated as *гіпокемія*. The word *hypoxemia* is of Latin origin. Therefore, when translating this term into the Ukrainian language, the method of transliteration was applied which means that the original written form was preserved neglecting the peculiarities of the pronunciation. In this case, the English letter "h" was changed to the Ukrainian letter "г", as the letter and sound "h" are not

present in the Ukrainian language, so this option is the closest in terms of sound. The letter "y" has been rendered as "ї", retaining the sound, "p" as "п", "o" as "о", "x" as "кх", "e" as "е", "m" as "м", "i" as "і" and "a" as "я", which is one of the closest to the English sound and also corresponds to the typical ending of Ukrainian feminine nouns.

Transliteration is similarly applied when translating the term *quadriceps*. In the Ukrainian language, the term is *квадрицепс*. Application of the technique of transliteration is determined by the fact that the term comes from the Latin *quadri-*. In this case, the English letter "q" was rendered as Ukrainian "к", while "u" was rendered as "в", which corresponds to the English term's pronunciation, and the letter "a" was rendered as "а", "d" as "д", "r" as "р", "i" as "и", since in the target language this letter represents the short sound "і", which is close to the Ukrainian "и". The letter "c" was rendered as "ц", "e" as "е", "p" as "п", and "s" as "с".

Translation by means of practical transcoding. This technique is applied in case the transliterated or transcribed form of a word is to be adapted to the norms of the target language.

Consequently, the adaptive transcoding technique is applied to the translation of the term *atrophy*, which is translated into Ukrainian as *атрофія*. Taking into consideration the differences between the Ukrainian and English languages, specifically in grammar, in addition to reproducing each letter of the English alphabet in Ukrainian, the ending -я should also be added, which is a typical ending for feminine nouns of the third declension in the Ukrainian language. The use of adaptive transcoding corresponds to the principle of preserving the original written form due to the absence of a direct equivalent in the Ukrainian language.

The term *ergotherapy* is translated as *ерготерапія*. In this case, the English letter "e" is rendered by the Ukrainian letter "е", "r" by "р", "g" by "г", "o" by "о", the letter combination "th" by "т", "e" by "е", "r" by "р", "a" by "а", "p" by "п", and the ending of the noun is adjusted to comply with the norms of the Ukrainian language by adding the ending "ія". Thus, this translation exemplifies the adaptive

transcoding.

Rehabilitation is translated into Ukrainian as *реабілітація*. Since this noun in Ukrainian is feminine, in addition to rendering each letter, its transliterated form has to be adjusted to the norms of the target language grammar by changing the ending from “tion” into “ція”.

This same principle can be implemented in the translation of the term *mobilisation*, which in the target language is *мобілізація*. The transliterated form of the noun was also adjusted by changing the ending in order to comply with the Ukrainian grammar.

Another medical term, *spirometry*, is translated into Ukrainian as *спірометрія*. This translation case involved transliteration, specifically rendering each letter neglecting the pronunciation. Moreover, the transliterated form has to be adapted to the target language, as in Ukrainian it is a feminine noun for which it is typical to acquire the ending “ія”. Thus, practical transcoding is applied in the translation of the term.

Myopathy is translated into Ukrainian as *міопатія*. In this case, the English letter “m” was rendered as “м”, “y” as “ї”, “o” as “о”, “p” as “п”, “a” as “а”, and the ending “thy” was adapted to comply the common feminine nouns ending the Ukrainian language, therefore in translation it became “тія”. The same translation method was applied when translating the term *neuropathy*, which in Ukrainian is *невропатія*.

2.1.2. Translation of terms by means of the descriptive approach

The term *recumbent* is translated into Ukrainian as *такий, що перебуває у лежачому положенні*. This translation exemplifies the application of the descriptive translation method. Application of the descriptive method in this case is due to the absence of a corresponding term in the Ukrainian language. Descriptive translation ensures that the meaning of the term is accurately conveyed and preserved. This approach ensures clarity, unless other translation techniques, such as transliteration, are not able to ensure the adequate conveyance of meaning and may instead cause

ambiguity. While the descriptive method may require more words in translation, it ensures that the recipient in the target language fully understands the meaning.

The term *passive limb exercises* is translated as *вправи для пасивних рухів кінцівками*. This is a medical term denoting therapeutic exercises on limbs without active use of their muscles. Translating this collocation by means of the descriptive method ensures that the meaning of the term is preserved, while it is still comprehensible for the Ukrainian recipient and the ambiguity is avoided.

2.1.3. Translation by means of calque

The term *bed exercises* is translated as *постільна гімнастика*. In order to translate this term, the calquing method was implemented, which implies the decomposition of a multi-word term from the source language and its subsequent reconstruction in the target language using the appropriate semantic units. Therefore, the first element “bed” of the term is rendered with the Ukrainian word “постільний”, which also refers to the place where a patient can lie down and reflect the meaning that the exercise is performed in the reclining position. The second element “exercises” is translated as “гімнастика”, which refers to physical exercises. Thus, the translation preserves the meaning of the term, specifically addressing the place of the exercise and the hint of the position in which it is performed and remains comprehensible to the Ukrainian recipient.

The term *breathing exercises* is translated into Ukrainian as *дихальні вправи*. The first element of the term “breathing” is rendered with the help of its equivalent - the adjective “дихальні”. The second element “exercises” refers to activities performed for the purpose of training, and it is also translated as “вправи”, the noun that has the same meaning in the Ukrainian language.

The term *congenital dislocated hip* is translated as *вроджений вивих стегна*. The first element “congenital” in this context refers to a disease that is present from birth, and it is translated in the Ukrainian with the word of the same meaning “вроджений”. The second element “dislocated” can be literally translated with the help of such adjectives as “вивихнути”, “зміщений” or with the help of the noun

“ВИВИХ”. The latter option is more common among the medical terminology and terms denoting diseases and disorders. The third element of the term is “hip”, and it is translated as “стегна”.

The term *continuous passive motion* is translated as *безперервний пасивний рух*. The first element "continuous" was translated with the Ukrainian equivalent "безперервний", "passive" was translated with the equivalent "пасивний", and "motion" was translated with the equivalent "рух". The use of this technique in this case is due to the absence of a direct equivalent in the target language. It ensures clarity while preserving the basic meaning of each element and facilitates understanding for an audience familiar with the concepts of the source language.

The term *flaccid limbs* is translated as *в'ялість кінцівок*. Each element of the term was used independently. The first element can be translated into Ukrainian as “МЛЯВІСТЬ” or “В’ЯЛІСТЬ”. Since the latter one is more common for medical terminology making it a more preferable option to convey the meaning as it refers to lethargy or lack of muscle tone. The second element of the term “*limbs*” is rendered with the Ukrainian equivalent “*кінцівки*”. Thus, this transformation ensures that the meaning of the term is accurately rendered, and ambiguity is excluded.

Knee-chest position is translated as *колінно-грудне положення*. To translate this term into Ukrainian, each element has to be translated independently. Therefore, the first element “knee” is rendered by the Ukrainian equivalent “колінно”, “chest” becomes “грудне”, and the last element of the term “position” is translated with the help of the word of the same meaning in the target language “положення”. Thus, the translation appears to be literal, though it still accurately captures the meaning of the term and does not distort it.

The term *prone position* is translated into Ukrainian as *лежаче положення*. The first element of the term “prone” refers to the position of lying flat, therefore in the Ukrainian language it is rendered as “лежаче”. The second element “position” is translated with the help of one of the equivalents of this word, “положення”.

Another example illustrating the use of the application of calque is *upright*

positioning which in the translation into the Ukrainian language is *вертикальне положення*. In this case, the first element of the term "upright" was rendered as "вертикальне", and "positioning" as "положення". This translation ensures that the meaning is fully conveyed.

The same approach is implemented in the translation of the English term *passive stretching* which is translated by means of replacing each element of the term with the equivalents in the target language resulting in the Ukrainian term *пасивна розтяжка*.

The term *resistance exercises* is translated as *вправи з опором*. The first element "resistance" is translated as "з опором". Moreover, the transposition occurs in this example, as the element in English term takes the first position, and in the target language it takes the second position in the collocation. This illustrates the common difference in collocation structure between the languages. The second element "exercises" is rendered "вправи", which preserves the meaning and conveys it precisely.

Dyspnea is translated into Ukrainian as *задишка*. The term in English is used to denote a condition of having breathing problems. Therefore, it can be rendered by direct translation with the help of a Ukrainian equivalent, which has the same meaning as the term of the source language.

Occupational therapy is translated as *заняттєва терапія*. The first element of the term refers to activities, which in this context are to be of therapeutic effect for the patient. It is translated into Ukrainian with the help of its equivalent "заняттєва". The second element of the term "терапія" is translated as "терапія". Therefore, translating each term individually helps to get a translation that fully preserves the meaning of the phrase from the source language and makes it comprehensible in the target language.

Translation of the term *musculoskeletal disorders* exemplifies the usage of the calque as well. The term is literally divided into two words: "musculoskeletal" which in Ukrainian is "опорно-руховий" and "disorders" which in Ukrainian is

"захворювання". The Ukrainian translation "захворювання опорно-рухового апарату" is a direct equivalent of these two words, where the addition of the word "апарату" was necessary to ensure that the meaning of the term was fully rendered and that it is comprehensible to the Ukrainian-speaking recipient. Besides, due to the differences in English and Ukrainian grammar, transposition, which is the change in the order of elements, was used in the translation of this term.

Joint mobility is translated into Ukrainian as *мобільність суглобів*. Each word of the collocation was rendered independently into the target language, which represents the application of calque. The first element of the term "joint" was rendered as "мобільність". It should be noted that the word "joint" has an attributive function in the collocation. Since the Ukrainian language doesn't allow the adjective form of the word "joint" in the context, it is replaced by a plural noun to comply with the grammar norms of the target language. The second element is rendered as "мобільність". Moreover, the element order was also changed in the translation to adhere to a typical Ukrainian collocation structure.

2.2. Translation transformations at the sentence level

Technical discourse texts are characterised by an extensive usage of passive voice, infinitive constructions, and gerunds, which may pose a challenge for a translator. We have selected twenty-five sentence examples featuring the following grammatical structures from the articles on physiotherapy.

Thirty-seven examples of various translation transformations were found in the sentences. The most frequent among them is grammatical replacement, as it accounted for 62,2% of all other transformations. This is due to the fact that English-language texts of scientific discourse are characterised by the extensive use of passive constructions, which is atypical for the grammar of the Ukrainian language.

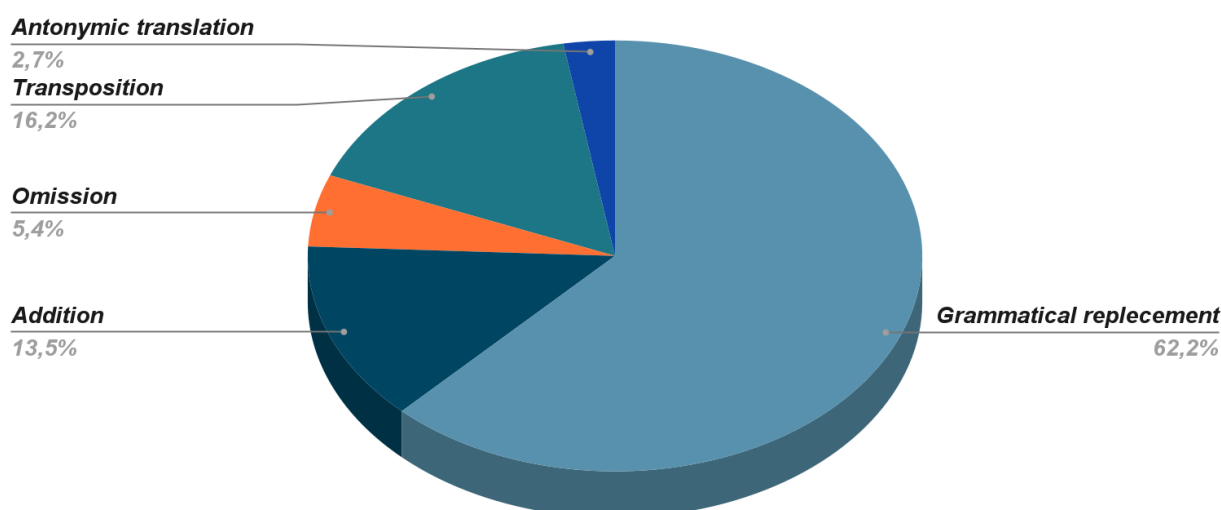
The transposition also proved to be frequent, as it accounted for 16,2%. This transformation took place in cases where the change of the word order would enable the translation to comply with the grammar norms of the target language, or in cases it was necessary to maintain the focus on the elements that were inherent in the

sentence of the source language.

Addition accounted for 13.5% and appeared to be another frequently used transformation. This is due to the grammatical features inherent in the scientific discourse texts and the challenges they pose for the translation sometimes. Thus, when dealing with gerunds or infinitive constructions, a translator may need to add words to provide an adequate translation.

While less frequently, omission, which accounted for 5.4%, and antonymic translation, which accounted for only 2.7%, were also applied.

Diagram 2: possible translation transformations at the sentence level



2.2.1. Translation by means of transposition

It was identified that transposition was applied when translating sentences built with the help of Complex Subject, which do not have any equivalents in the Ukrainian language. Thus, this technique helped to preserve the meaning in the following sentence:

At the moment diagnostic procedures seem to contribute only in a global sense to the choice of physiotherapeutic treatment. (EPMD: 76) - На даний момент

діагностичні процедури, здається, лише в глобальному сенсі сприяють вибору фізіотерапевтичного лікування.

In this case, the transposition of the verb “contribute”, translated into Ukrainian as “сприяють”, occurred. Besides, grammatical replacement was applied, since the verb of the source language “seem” was rendered with the help of a modal particle “здається” into the target language.

The following sentences also exemplify application of transposition:

Patients with back and neck complaints are often treated by physiotherapists.
(EPMD: 74) - *Часто пацієнтів із скаргами на спину та шию лікують фізіотерапевти.*

Routine breathing exercises should not be used following uncomplicated coronary artery bypass surgery. (PICU: 69) - *Не слід застосовувати звичайні дихальні вправи після нескладного аортокоронарного шунтування.*

Furthermore, these sentences exemplify grammatical transposition, since both of them contain a predicate represented by a passive verb which was rendered into Ukrainian with the help of an active verb. In the first sentence, the passive voice is used to emphasise the patients, not the physiotherapists. Therefore, the transposition and grammatical replacement of the passive verb "are treated" with the Ukrainian active verb "лікують" helps to preserve and not eliminate the emphasis inherent in the original sentence when translated into the target language. In the second sentence, the passive voice is used to avoid naming the person doing the action. When translated into Ukrainian, the passive infinitive "be used" was rendered with the infinitive of active form "застосовувати". Thus, the translated sentence complies with the norms of Ukrainian grammar and does not distort the meaning intended in the original sentence, since the translated version also avoids naming the performer by using an impersonal sentence.

The following example further demonstrates the application of the transposition, where the order of the element is rearranged:

Rehabilitation was considered as contraindicated, mainly due to sedation and renal replacement, in more than 40% of the ICU days of critically ill patients. - У понад 40% випадків перебування критично хворих пацієнтів у відділенні інтенсивної терапії реабілітацію вважали протипоказаною, здебільшого через седацію та ниркову замісну терапію.

In this case, the transposition takes place in relation to the following passage: “*in more than 40% of the ICU days of critically ill patients*”, which is found at the end of the sentence of the source text, while in the translation this passage comes at the beginning of the sentence. Moreover, this translation involves the transformation of grammatical replacement. The sentence of the source text implies the use of the passive voice, namely, the subject of the sentence is expressed by a passive voice verb “was considered”. In the translation, this predicate is replaced with one represented by a verb of active voice of the past tense “вважали”. Thus, despite the transformation of the sentence structure and grammatical features, the meaning of the sentence is preserved and accurately conveyed. The time frame of the sentence was also respected. In addition, apart from the full preservation of the meaning, the sentence also conforms to the grammatical norms of the target language and is understandable to the recipient.

Another sentence to exemplify the occurrence of both transposition and grammatical replacement is:

To determine the efficacy of exercise therapy 16 trials, in which exercise therapy was given by physiotherapists to individual patients with back pain, were identified. (EPMD: 75) - Для визначення ефективності ЛФК відібрали 16 досліджень, в яких фізіотерапевти проводили ЛФК окремим пацієнтам з болем у спині.

In this case, the transposition of the verb “were identified” is applied, as in the source sentence it is at the end of the utterance while in the translation it is moved to the beginning of it. Furthermore, a grammatical replacement is applied by using the active verb "відібрали" instead of the passive voice "were identified." Moreover, grammatical replacement was also used to render the passive verb “was given”, which was replaced in the translation with an active verb “проводили”. Such transformation also requires the transposition of the noun “physiotherapists” which followed the verb in the source sentence, and in the translation was moved to second position before the predicate.

2.2.2. Translation by means of grammatical replacement

It was identified that grammatical replacement has been applied when translating passive voice sentences from the English language. This can be explained by the fact that for English-language texts of scientific discourse it is typical to use passive constructions a lot, unlike the Ukrainian language, which is atypical for frequent use of the passive voice. This translation transformation was applied when translating the following sentence:

A slower muscle protein catabolism and increase in total RNA content were also seen after EMS in patients with major abdominal surgery. (PICU: 69) - Уповільнення процесів розщеплення м'язових білків і збільшення вмісту загальної РНК також виявили після ЕМС у пацієнтів з великими абдомінальними хірургічними втручаннями.

In this case, the predicate expressed by the passive voice verb "were seen" was rendered into Ukrainian with the help of the active form verb "виявили".

The same transformation can be observed in the translation of the following sentence:

The efficacy of physiotherapeutic treatments for musculoskeletal disorders has been investigated for many interventions and indications. (EPMD: 76) - Ефективність фізіотерапевтичних методів лікування захворювань опорно-рухового апарату досліджували для різних втручань і показань.

In this case, the grammatical transposition is applied towards the predicate represented by the passive voice verb “has been investigated”, and which in the translation is replaced by the active voice verb “досліджували”.

The following translation example further demonstrates the application of the transformation of grammatical replacement:

The importance of body positioning (‘stirring up’ patients) was reported as early as the 1940s. - Про важливість позиціонування тіла (“розворушення” пацієнтів) наголошували ще в 1940-х роках.

In this case, the sentence of the source text contains passive voice, the predicate represented by the passive verb “was reported”. In the translation, this predicated is replaced by an active verb of the past tense “наголошували”. Moreover, the differentiation occurs in the translation as the verb “reported” can be translated in different ways, such as “повідомляли”, “зазначали”, “фіксували”, however in this context “наголошували” captures the meaning most closely.

Similar transformation is applied in the translation of the following sentence containing a passive verb:

Patients were, for instance, treated with ultrasound, laser therapy, short wave diathermy and exercise therapy. (EPMD: 75) - Пацієнтів, наприклад, лікували ультразвуком, лазерною терапією, короткохвильовою діатермією та лікувальною фізкультурою.

The sentence of the source language contains a predicate “were treated”, which is represented by a passive verb. In this case, literal translation and preservation of the passive form in Ukrainian would result in a sentence that is too long and incomprehensible for the Ukrainian recipient. Therefore, grammatical replacement was applied, which means the passive verb is replaced in the translation by an active verb “лікували”.

The same transformation, namely the grammatical replacement of the passive verb of the source language with the active verb of a target language, was applied to the following sentences:

In patients unable to perform voluntary muscle contractions, electrical muscle stimulation (EMS) has been used to prevent disuse muscle atrophy. (PICU: 69) - У пацієнтів, які не можуть виконувати довільні м'язові скорочення, електричну м'язову стимуляцію (ЕМС) застосовують для запобігання атрофії м'язів, що не використовуються.

Patients with back and neck complaints are often treated by physiotherapists. (EPMD: 74) - Часто пацієнтів із скаргами на спину та шию лікують фізіотерапевти.

The application of the grammatical replacement is also observed in sentences involving passive Infinitives following the verb “need”, as it is in the following one:

To simulate the normal perturbations that the human body experiences in health, the patient who is critically ill needs to be positioned upright (well supported), and rotated when recumbent. (PICU: 67) - Для імітації нормальних пертурбацій, яких зазнає людське тіло у здоровому стані, пацієнта, який перебуває у важкому стані, потрібно перевести у вертикальне положення (з хорошою підтримкою), а пацієнта у лежачому положенні - повернути на спину.

In this case, the passive Infinitive “to be positioned” is replaced in the translation by the active verb “перевести”. The following sentence demonstrates the same transformation, in which the passive infinitive “to be paid” is replaced by an active verb “приділяти”:

Furthermore, in future randomized clinical trials, more attention needs to be paid to the explicit description of the inclusion and exclusion criteria of the patients and the selection of a prognostically homogeneous study population. (EPMD: 76) - Крім того, в майбутніх рандомізованих клінічних дослідженнях необхідно приділяти більше уваги чіткому опису критеріїв включення та виключення пацієнтів і відбору прогностично однорідної досліджуваної популяції.

Another sentence to exemplify the grammatical replacement is:

For each diagnostic group a variety of treatment possibilities were investigated for their efficacy. (EPMD: 75) - Для кожної діагностичної групи провели дослідження ефективності різних методів лікування.

In this case, grammatical replacement of the parts of speech is implemented, since the second element of the predicate, namely the past participle “investigated”, is rendered into Ukrainian with the help of the noun “дослідження”. It is worth mentioning that apart from the grammatical transposition, the modulation was also applied, as the verb “were” is translated into Ukrainian “провели”. This slight change helps to keep the sentences consistent and conveys the meaning.

Grammatical transformation, namely the replacement of a passive voice verb with an active voice verb, was also found in sentences where passive voice infinitives were used after modal verbs. For example, as in the following sentence, where the passive infinitive "be needed" after the modal "may" is translated into Ukrainian by using the active voice infinitive "знадобитися":

Lifts may be needed to change a patient's position safely. (PICU: 69) - Для безпечної зміни положення пацієнта можуть знадобитися носії.

The same transformation with a grammatical substitution concerning the infinitive occurs in the following sentence:

Existing muscle strain or spinal nerve root compression could be reduced, and a temporary luxation of a zygo-apophysal disc or joint capsule can theoretically be released. (EPMD: 75) - Наявну м'язову напругу або компресію спинномозкового нервового корінця можна зменшити, а тимчасовий вивих міжхребцевого диска або суглобової капсули теоретично можна вправити.

The trials included in the meta-analyses can be considered to be the best studies available evaluating the efficacy of physiotherapy. (EPMD: 75) - Дослідження, включені в мета-аналіз, можна вважати найкращими дослідженнями, що оцінюють ефективність фізіотерапії.

These effects can be exacerbated by inflammation lack of glycemic control and pharmacological agents. (PICU: 69) - Ці ефекти можуть посилюватися запаленням, відсутністю глікемічного контролю та фармакологічними препаратами.

Furthermore, it was observed that, along with the translation transformation described above, antonymic translation occurred as well, as in the following sentence:

Thirty-one trials showed a positive result, whereas in the other trials no positive effect could be detected. (EPMD: 75) - Тридцять одне випробування показало позитивний результат, тоді як в інших випробуваннях не виявили жодного позитивного ефекту.

In this case, the passive infinitive "be detected" was rendered with the active voice verb "detected". Moreover, in the Ukrainian translation, the negative form of

the verb was used, i.e. with the negative particle "not", while the English predicate is in the affirmative form. This is an example of how translators can use a combination of techniques to achieve a clear and natural sounding translation. The shift to the active voice makes the sentence more concise, while the antonymic translation with negation accurately conveys the meaning.

The following sentence and its translation also illustrate the application of grammatical replacement in the case of the passive infinitive:

This problem could be avoided if sample sizes in physiotherapy trials were based on more realistic assumptions about the expected difference in effect. (EPMD: 76) - Цієї проблеми можна було б уникнути, якби розміри вибірок у фізіотерапевтичних дослідженнях базувалися на більш реалістичних припущеннях щодо очікуваної різниці в ефекті.

This case includes two cases of grammatical substitution. First, it is the translation of the passive infinitive 'be avoided' used after the modal verb 'could', which was rendered into Ukrainian as an active verb 'можна було б уникнути'. The second case of grammatical substitution in the sentence is the translation of the verb in the passive voice "were founded". In the original sentence, the passive voice is used to emphasise the action of the verb, not the subject. The Ukrainian translation uses the active voice verb "базувалися". This change is necessary because the passive voice is not commonly used in Ukrainian. Besides, the particle 'б' was added to the translation, which helps to recreate the conditionality inherent in the original sentence by using the past modal. In general, the translation of this sentence is a good example of how grammatical replacement can be used to translate passive infinitives and other grammatical features that are not present in the target language.

2.2.2. Translation by means of omission and addition

In the course of analysing the articles on physiotherapy, specifically their grammatical features and the transformation used to translate such features, we have identified that the transformation of addition was employed in cases of the use of participles 1, used as adjectives. The following sentence exemplifies this transformation:

About 40% of the Dutch population visiting physiotherapists are patients with these complaints. (EPMD: 74) - Близько 40% населення Нідерландів, які звертаються до фізіотерапевтів, - це пацієнти з такими скаргами.

In the translation of this sentence, participle 1, namely "visiting", was rendered into Ukrainian by using both grammatical substitution and addition. The participle "visiting" acts in a sentence as an adjective, modifying the noun "population". The grammatical substitution concerns "visiting", which was omitted in the translation by means of an active voice verb "звертаються". Furthermore, to create a relative clause in the translated sentence, the conjunction "які" was added. This combination achieves a similar meaning to the original sentence. While the structure is different, the information conveyed remains the same.

Another translation to exemplify the usage of the transformations, addition and grammatical replacement, is:

Among the better studies only one had results confirming the efficacy of a physiotherapeutic treatment (pulsed electromagnetic field therapy) compared with placebo therapy. (EPMD: 75) - З-поміж кращих досліджень лише одне мало результати, які підтверджують ефективність фізіотерапевтичного лікування (терапія імпульсним електромагнітним полем) порівняно з плацебо-терапією.

In this case, the transformation was applied to render the participle 1 "confirming", which is translated into Ukrainian with the help of an active verb "підтверджують". This is an example of grammatical replacement, where the

grammatical structure of the original sentence is changed to conform to the target language. Furthermore, the conjunction “які” was added in order to create a relative clause that complies with Ukrainian grammatical norms. This addition ensures that the syntactic structure of the translated sentence is preserved. The combination of these two transformations enables the meaning of the original sentence to be conveyed in the target language, even though the structure is changed.

Moreover, a sentence exemplifying the use of a participle functioning as an adjective can be found in the following example:

The majority of patients undergoing major thoracic and abdominal surgery recover without complications. (PICU: 69) - Більшість пацієнтів, які перенесли серйозні торакальні та абдомінальні операції, одужують без ускладнень.

Since it is impossible for the participle 1 to be translated directly into Ukrainian, it is replaced by an active verb in the past form “перенесли”, which exemplifies the application of the grammar replacement. The grammatical structure of the target sentence is challenged in order to comply with Ukrainian grammar, where active verbs are of a more frequent usage. Furthermore, this translation exemplifies the transformation of addition, as the conjunction “які” was added to the sentence in the target language.

Addition is also applied in the translation of the following sentence:

In order to gain more insight into these questions a literature review was carried out, in which randomized clinical trials dealing with the efficacy of physiotherapy were identified and analysed. ((EPMD: 73) - Для того, щоб краще зрозуміти ці питання, ми провели огляд літератури, в якому були виявлені та проаналізовані рандомізовані клінічні дослідження, що стосуються ефективності фізіотерапії.

In the sentence of the source language, the passive voice of the verb “to carry” is used. Since, passive voice is of less frequent use in the Ukrainian language, several transformations occurred in the translation. First, the addition of the personal pronoun “ми” was applied to add the performer to the sentence. Second, the application of the grammatical replacement can be observed in the example, as the passive verb “was carried out” is replaced by an active verb “провели”. It should be also mentioned that the grammatical replacement required the transposition in this case. It was implemented to this extract: “...a literature review was carried out...”, where the object is followed by the predicate, while in the Ukrainian translation object comes after the predicate: “...ми провели *огляд літератури*...”

The transformation of omission involves the removal of one or more elements of the source text during translation. This technique stands in direct contrast to addition, where supplementary information is introduced in the target text. Among the sentences chosen for the work, only two examples of application of this technique were found, which indicates that this transformation is not of a frequent use. Here is an example of the translation exemplifying omission:

In general, the efficacy of laser therapy for musculoskeletal disorders seems to be greater than the efficacy of a placebo treatment. (EPMD: 75) - Загалом, ефективність лазерної терапії при захворюваннях опорно-рухового апарату видається вищою, ніж ефективність лікування плацебо.

Thus, in the translation of this sentence into Ukrainian, the verb "to be" was omitted. This is due to the fact that it is typical for Ukrainian grammar to exclude this verb in the present tense. In this case, the transformation of omission does not change or distort the meaning of the sentence, but on the contrary makes the sentence in the target language more concise and compliant with the target language norms.

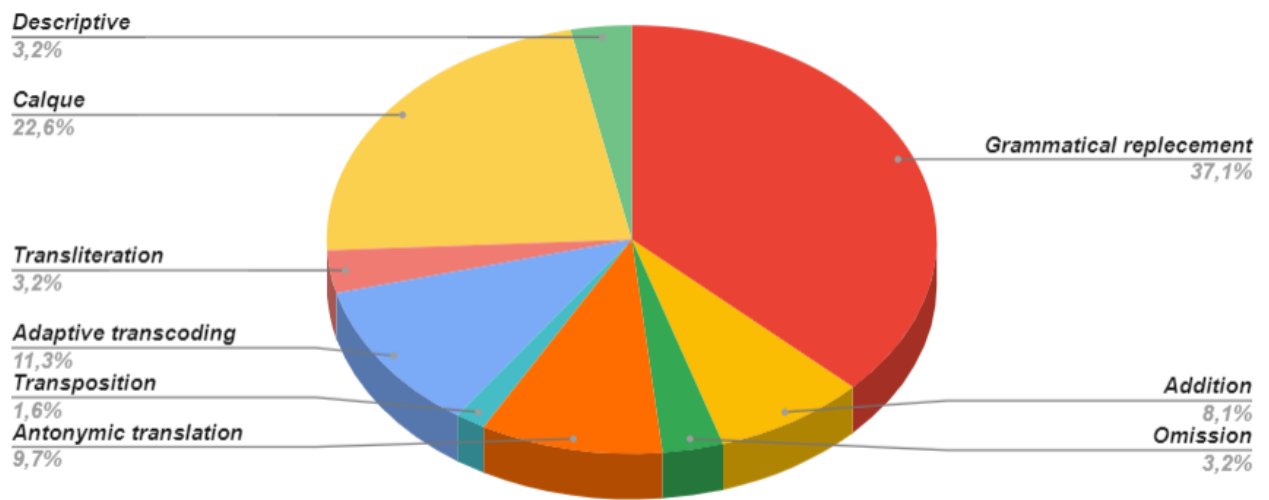
Another translation to exemplify the omission, namely the omission of the verb, is:

For rheumatoid arthritis, post-traumatic joint disorders, and myofascial pain, laser therapy seems to have a substantial specific therapeutic effect. (EPMD: 75) - При ревматоїдному артриті, посттравматичних захворюваннях суглобів і міофасціальному болю лазерна терапія має значний специфічний терапевтичний ефект.

In this case, the verb 'seems' has been omitted in the translation. This is due to the fact that this verb is not necessary for conveying the meaning and flow in Ukrainian. In Ukrainian, the verb 'мати' can be used both to express the idea of possession and to express the idea of existence. In this case, the verb "have" is used to express the idea that laser therapy has a significant specific therapeutic effect. Therefore, omitting the verb 'seems' does not change the meaning of the sentence, but only makes it more concise and comprehensible, a feature that is highly important in texts of scientific discourse.

3.1. Translation transformation overview

In the course of this work, fifty illustrative units were analysed, among which sixty-two examples of translation transformations were identified. Therefore, we may create a diagram illustrating the frequency of use (lexical, grammatical, lexical and grammatical). Based on this information, it can be concluded that grammatical transformations prevail over all others. The lowest number of examples of application has been found among lexical and grammatical transformations.



CONCLUSIONS

Research into the study of the language for special purposes and providing a firm definition of this concept is a matter of great interest to many linguists. Currently, according to the results of research it was established that LSP is a sublanguage of the general language. While there are different definitions of ESP, the common thread in them is the identification of the language by its specialised vocabulary, grammatical features and stylistic choices that differ from general language. It was also made clear that the purpose of this sublanguage is to facilitate communication between professionals within their field. At the same time, several definitions put a greater emphasis on specialised vocabulary, whereas others emphasise functionality.

Furthermore, translation of LSP texts arouses great interest among linguists. Translating such texts poses difficulties due to their specialised vocabulary, complex terminology, and distinctive grammatical features. The subtleties of translating specialised vocabulary and terminology are the subject of works by A. Kovalnek, V. Karaban, T. Kyiak and many other linguists. Their works outline the principles of dealing with such lexical units. The idea that in order to successfully translate texts into a professional language, a translator must not only have a good command of the source language, but also be familiar with the nuances of the field of translation (medical, legal, technical, etc.) is also emphasised.

Translating texts of scientific discourse, namely physiotherapy texts, poses certain difficulties for the translator. Such texts are full of terminology to be clearly and unambiguously conveyed and the texts feature specific grammatical constructions that may be uncharacteristic of the target language, which requires the translator to apply certain transformations.

In the course of the study, it was established that the most commonly used translation methods for physiotherapy discourse terms include adaptive transcoding

and calque. Transliteration and descriptive translation were the least frequently used. This can be explained by the fact that such translation methods do not always allow for a precise and unambiguous rendering of the term in the target language.

When reviewing sentences containing grammatical structures typical of scientific discourse, such as passive voice, infinitive and gerund constructions, it was found that grammatical substitution is the most frequent transformation. Since it is not typical for the Ukrainian language to use the passive voice frequently, unlike English, the passive voice is often changed to the active voice when translating from English into Ukrainian. Transposition and addition transformations appeared to be less frequent. The least number of cases of use was among antonymic translation and omission.

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ANNEX

Transformations for translating physiotherapy terms:

English term	Ukrainian term	Transformation
<i>Atrophy</i>	<i>Атрофія</i>	Adaptive transcoding
<i>Bed exercises</i>	<i>Постільна гімнастика</i>	Calque
<i>Breathing exercises</i>	<i>Дихальні вправи</i>	Calque
<i>Congenital dislocated hip</i>	<i>Вроджений вивих стегна</i>	Calque
<i>Continuous passive motion</i>	<i>Безперервний пасивний рух</i>	Calque
<i>Dyspnea</i>	<i>Задишка</i>	Calque
<i>Ergotherapy</i>	<i>Ерготерапія</i>	Adaptive transcoding
<i>Flaccid limbs</i>	<i>В'ялість кінцівок</i>	Calque
<i>Hypoxemia</i>	<i>Гіпоксемія</i>	Transliteration
<i>Joint mobility</i>	<i>Мобільність суглобів</i>	Calque
<i>Knee-chest position</i>	<i>Колінно-грудне положення</i>	Calque
<i>Mobilisation</i>	<i>Мобілізація</i>	Adaptive transcoding
<i>Musculoskeletal disorder</i>	<i>Захворювання опорно-рухового апарату</i>	Calque
<i>Myopathy</i>	<i>Міопатія</i>	Adaptive transcoding
<i>Neuropathy</i>	<i>Невропатія</i>	Adaptive transcoding
<i>Occupational therapy</i>	<i>Заняттєва терапія</i>	Calque
<i>Passive limb exercises</i>	<i>Вправи для пасивних рухів кінцівками</i>	Descriptive
<i>Passive stretching</i>	<i>Пасивна розтяжка</i>	Calque

<i>Prone position</i>	<i>Лежаче положення</i>	Calque
<i>Quadriceps</i>	<i>Квадрицепс</i>	Transliteration
<i>Recumbent</i>	<i>Такий, що перебуває у лежачому положенні</i>	Descriptive
<i>Rehabilitation</i>	<i>Реабілітація</i>	Adaptive transcoding
<i>Resistance exercises</i>	<i>Вправи з опором</i>	Calque
<i>Spirometry</i>	<i>Спірометрія</i>	Adaptive transcoding
<i>Upright positioning</i>	<i>Вертикальне положення</i>	Calque

Transformations for translating sentences:

English sentence	Ukrainian sentence	
<i>About 40% of the Dutch population <u>visiting</u> physiotherapists are patients with these complaints.</i>	<i>Близько 40% населення Нідерландів, <u>які звертаються</u> до фізіотерапевтів, - це пацієнти з такими скаргами.</i>	Addition, grammatical replacement
<i>Among the better studies only one had results <u>confirming the efficacy</u> of a physiotherapeutic treatment (pulsed electromagnetic field therapy) compared with placebo therapy.</i>	<i>З-поміж кращих досліджень лише одне мало результати, <u>які підтверджують</u> ефективність фізіотерапевтичного лікування (терапія імпульсним електромагнітним полем) порівняно з плацебо-терапією.</i>	Addition, grammatical replacement
<i>A slower muscle protein catabolism and increase in total RNA content <u>were also seen</u> after</i>	<i>Уповільнення процесів розщеплення м'язових білків і збільшення вмісту загальної РНК</i>	Grammatical replacement

<p><i>EMS in patients with major abdominal surgery.</i></p>	<p><i>також виявили після ЕМС у пацієнтів з великими абдомінальними хірургічними втручаннями.</i></p>	
<p><i>At the moment diagnostic procedures seem to contribute only in a global sense to the choice of physiotherapeutic treatment.</i></p>	<p><i>На даний момент діагностичні процедури, здається, лише в глобальному сенсі сприяють вибору фізіотерапевтичного лікування.</i></p>	<p>Grammatical replacement, transposition</p>
<p><i>Existing muscle strain or spinal nerve root compression could be reduced, and a temporary luxation of a zygo-apophysical disc or joint capsule can theoretically be released.</i></p>	<p><i>Наявну м'язову напругу або компресію спинномозкового нервового корінця можна зменшити, а тимчасовий вивих міжхребцевого диска або суглобової капсули теоретично можна вправити.</i></p>	<p>Grammatical replacement</p>
<p><i>For each diagnostic group a variety of treatment possibilities were investigated for their efficacy.</i></p>	<p><i>Для кожної діагностичної групи провели дослідження ефективності різних методів лікування.</i></p>	<p>Grammatical replacement, modulation</p>
<p><i>For rheumatoid arthritis, post-traumatic joint disorders, and myofascial pain, laser therapy seems to have a substantial specific therapeutic effect.</i></p>	<p><i>При ревматоїдному артриті, посттравматичних захворюваннях суглобів і міофасціальному болю лазерна терапія має значний специфічний терапевтичний ефект.</i></p>	<p>Omission</p>
<p><i>Furthermore, in future randomized clinical</i></p>	<p><i>Крім того, в майбутніх</i></p>	<p>Grammatical replacement</p>

<p>trials, more attention <u>needs to be paid to the explicit description of the inclusion and exclusion criteria of the patients and the selection of a prognostically homogeneous study population.</u></p>	<p>рандомізованих клінічних дослідженнях <u>необхідно приділяти більше уваги чіткому опису критеріїв включення та виключення пацієнтів і відбору прогностично однорідної досліджуваної популяції.</u></p>	
<p><i>In general, the efficacy of laser therapy for musculoskeletal disorders <u>seems to be greater than the efficacy of a placebo treatment.</u></i></p>	<p>Загалом, ефективність лазерної терапії при захворюваннях опорно-рухового апарату <u>видається вищою, ніж ефективність лікування плацебо.</u></p>	Omission
<p><i>In order to gain more insight into these questions <u>a literature review was carried out, in which randomized clinical trials dealing with the efficacy of physiotherapy were identified and analysed.</u></i></p>	<p>Для того, щоб краще зрозуміти ці питання, ми <u>провели огляд літератури, в якому були виявлені та проаналізовані рандомізовані клінічні дослідження, що стосуються ефективності фізіотерапії.</u></p>	Grammatical replacement, addition, transposition
<p><i>In patients unable to perform voluntary muscle contractions, electrical muscle stimulation (EMS) <u>has been used to prevent disuse muscle atrophy.</u></i></p>	<p>У пацієнтів, які не можуть виконувати довільні м'язові скорочення, електричну м'язову стимуляцію (ЕМС) <u>застосовують</u> для запобігання атрофії м'язів, що не</p>	Grammatical replacement

	використовуються.	
<i>Lifts <u>may be needed</u> to change a patient's position safely.</i>	Для безпечної зміни положення пацієнта <u>можуть знадобитися</u> ноші.	Grammatical replacement
<i>Patients with back and neck complaints <u>are often treated</u> by physiotherapists.</i>	Часто пацієнтів із скаргами на спину та шию <u>лікують</u> фізіотерапевти.	Grammatical replacement, transposition
<i>Patients <u>were</u>, for instance, <u>treated</u> with ultrasound, laser therapy, short wave diathermy and exercise therapy.</i>	Пацієнтів, наприклад, <u>лікували</u> ультразвуком, лазерною терапією, короткохвильовою діатермією та лікувальною фізкультурою.	Grammatical replacement
<i>Rehabilitation <u>was considered</u> as contraindicated, mainly due to sedation and renal replacement, in more than 40% of the ICU days of critically ill patients.</i>	У понад 40% випадків перебування критично хворих пацієнтів у відділенні інтенсивної терапії реабілітацію <u>вважали</u> протипоказаною, здебільшого через седацію та ниркову замісну терапію.	Grammatical replacement, transposition
<i>Routine breathing exercises <u>should not be used</u> following uncomplicated coronary artery bypass surgery.</i>	<u>Не слід</u> застосовувати звичайні дихальні вправи після нескладного аортокоронарного шунтування.	Grammatical replacement, transposition
<i>The efficacy of physiotherapeutic treatments for musculoskeletal disorders <u>has been investigated</u> for many</i>	Ефективність фізіотерапевтичних методів лікування захворювань опорно-рухового апарату <u>досліджували</u> для	Grammatical replacement

<i>interventions and indications.</i>	<i>різних втручань і показань.</i>	
<i>The importance of body positioning ('stirring up' patients) was reported as early as the 1940s.</i>	<i>Про важливість позиціонування тіла ("розворушення" пацієнтів) наголошували ще в 1940-х роках.</i>	Grammatical replacement
<i>The majority of patients undergoing major thoracic and abdominal surgery recover without complications.</i>	<i>Більшість пацієнтів, які перенесли серйозні торакальні та абдомінальні операції, одужують без ускладнень.</i>	Addition, grammatical replacement
<i>The trials included in the meta-analyses can be considered to be the best studies available evaluating the efficacy of physiotherapy.</i>	<i>Дослідження, включені в мета-аналіз, можна вважати найкращими дослідженнями, що оцінюють ефективність фізіотерапії.</i>	Grammatical replacement
<i>Thirty-one trials showed a positive result, whereas in the other trials no positive effect could be detected.</i>	<i>Тридцять одне випробування показало позитивний результат, тоді як в інших випробуваннях не виявили жодного позитивного ефекту.</i>	Grammatical replacement, antonymic translation
<i>To determine the efficacy of exercise therapy 16 trials, in which exercise therapy was given by physiotherapists to individual patients with back pain, were identified.</i>	<i>Для визначення ефективності ЛФК відібрали 16 досліджень, в яких фізіотерапевти проводили ЛФК окремим пацієнтам з болем у спині.</i>	Grammatical replacement, transposition
<i>This problem could be</i>	<i>Цієї проблеми можна</i>	Grammatical

<p><i>avoided if sample sizes in physiotherapy trials were based on more realistic assumptions about the expected difference in effect.</i></p>	<p><i>було б уникнути, якби розміри вибірок у фізіотерапевтичних дослідженнях базувалися на більш реалістичних припущеннях щодо очікуваної різниці в ефекті.</i></p>	<p>replacement, addition</p>
<p><i>To simulate the normal perturbations that the human body experiences in health, the patient who is critically ill needs to be positioned upright (well supported), and rotated when recumbent.</i></p>	<p><i>Для імітації нормальних пертурбацій, яких зазнає людське тіло у здоровому стані, пацієнта, який перебуває у важкому стані, потрібно перевести у вертикальне положення (з хорошою підтримкою), а пацієнта у лежачому положенні - повернути на спину.</i></p>	<p>Grammatical replacement</p>
<p><i>These effects can be exacerbated by inflammation lack of glycemic control and pharmacological agents.</i></p>	<p><i>Ці ефекти можуть посилюватися запаленням, відсутністю глікемічного контролю та фармакологічними препаратами.</i></p>	<p>Grammatical replacement</p>

РЕЗЮМЕ

У ході роботи було здійснено аналіз особливостей перекладу фахової мови галузі фізіотерапії, а саме перекладу термінології та граматичним засобами, які притаманні для таких текстів. Для аналізу було обрано 50 ілюстративних одиниць, а саме 25 термінологічних одиниць та 25 речень. Для проведення аналізу було використано описовий та порівняльний методи.

Результати, які ми отримали у ході нашої роботи, можуть бути корисні для подальшого вивчення особливостей перекладу галузі фізіотерапії, для здійснення адекватного якісного перекладу, для підвищення кваліфікації фахівців із фізіотерапії, розширення доступу до інформації.

Ключові слова: особливості перекладу фахової мови фізіотерапії, терміни, граматичні особливості, науковий дискурс.