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Assessment of the economic value of physiotherapy treatment for economically effective results

■ **Abstract.** The purpose of the study was to compare the pricing of physiotherapy treatment in various countries of the world. A comparative analysis of the cost of physiotherapy was conducted in the United Kingdom, Germany, Slovenia, Spain, Switzerland, Ireland, Canada, Indonesia, New Zealand, and Australia. The cost of physiotherapy was calculated considering 10 sessions per course of treatment in each clinic. The study determined that the cost of physiotherapy and massage varied substantially depending on the region and the medical institution. In the London clinic, the cost of 10 sessions of physiotherapy ranges from USD 721.62 to USD 1,818.49, depending on the duration of the procedures, and

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10 massage sessions – from USD 787.23 to USD 1,115.24. In Switzerland, the same 45-minute course of physiotherapy costs USD 1,150, and an hour-long massage – USD 1,100. Financial costs for these procedures are substantially lower in Slovenia and Indonesia. In a Slovenian clinic, a course of 10 sessions of physiotherapy costs from USD 331.1 to USD 551.83, and massage – from USD 364.21 to USD 540.79. In Indonesia, the same course of physiotherapy is offered for USD 590.21–780.95, and massage – for USD 394.75–592.12. The cost of physiotherapy and massage procedures was directly related to the level of life and economic conditions in the country. In the United Kingdom and Switzerland, high health costs are explained by a high level of life and a developed medical infrastructure, while in Slovenia and Indonesia, services are more accessible to the public. Based on this, the most economically profitable solution for physiotherapy and massage is the introduction of batch sessions, which reduces the cost per session overall. In addition, financial costs are reduced due to reduced time for the procedure and the use of telemedicine during the rehabilitation session. This study helps to assess the pricing of physiotherapy procedures and further optimise national schemes with the formation of the most financially effective programmes

■ **Keywords:** cost of rehabilitation; financial benefits; therapy costs; return on investment; reduced costs

■ INTRODUCTION

The analysis of the economic prospects of physiotherapy treatment is becoming increasingly important in the field of medicine, where attention is paid, in particular, to cost optimisation. For example, physiotherapy can substantially increase the quality of life of patients, but for the development of effective physiotherapy programmes, it is important to consider its economic value, which is especially important against the background of growing health costs. This subject requires in-depth analysis to identify the most effective methods of physiotherapy in terms of costs and clinical results. The relevance of analysing the economic prospects of physiotherapy treatment is also due to the increasing burden on healthcare systems, especially in conditions of increasing life expectancy and chronic diseases. Such patients require long-term treatment and rehabilitation, which increases costs. In this regard, researchers around the world are examining economically effective solutions that will improve treatment outcomes while reducing the financial burden on the patient and healthcare.

A study by L.G. Oestergaard *et al.* (2020) evaluated the economic efficiency of rehabilitation with the participation of a specialist in patients after lumbar spinal fusion. Intervention costs amounted to EUR 3,984 (USD 4,375), which was offset by a partial reduction in hospital treatment costs by EUR 1,716 (USD 1,884). The disability index and quality of life indicators did not indicate an improvement, despite additional efforts in rehabilitation. The overall probability that this intervention was economically effective did not exceed 56%. Physiotherapy was more economically effective compared to arthroscopic partial meniscectomy (APM) in patients with non-obstructive meniscus rupture. As indicated by V.A. van de Graaf *et al.* (2020), after 24 months, the cost of physiotherapy was substantially lower than for APM, with a difference of EUR 1,803 (USD 1,979.96). The probability that physiotherapy was economically effective was 100%.

A group of researchers, headed by N. Oldridge & R.S. Taylor (2020) established that physical exercises in patients with ischaemic heart disease, chronic heart failure, and a body weight index of ≥ 25 kg/m² showed high economic efficiency in 63% of cases. In 26% of cases, interference was recognised as “not economically effective”. Differences in the probability of economic efficiency ranged from 23% to 100%. A paper of Q. Louw *et al.* (2020) examined the economic value of post-stroke rehabilitation. It was calculated that early rehabilitation has a high ratio of costs and

benefits for state structures. The cost of the programme was 3,322.21 per patient, while the potential economy based on return to work was estimated at USD 76.1 million for five years.

Group and individual physiotherapy after corticosteroid injection for subacromial impingement was considered in a paper by I. Ryans *et al.* (2020), evaluating its efficiency and economic integrity. The study involved 136 patients who measured their shoulder pain index and disability at week 26. Group physiotherapy was cheaper per patient. C. Merino-Osorio *et al.* (2020) evaluated the economic effectiveness of round-the-clock physiotherapy (24/7-PT) administration in the intensive care unit. Cost and benefit analysis was performed for 697 hypothetical hospitalisations of adult patients with cardiovascular and respiratory diseases. The results showed that the introduction of 24/7-PT allowed saving USD 16,242 in the first year and USD 69,351 in 5 years. Of the 30 scenarios reviewed, 87% demonstrated a clean economy. C.M. Orndahl *et al.* (2021) analysed the cost and value of physiotherapy among patients after knee arthroplasty. The results showed that physiotherapy was more expensive for the subgroup with a negative outcome: in the period of 2–6 months, the cost of improving 1 unit of the pain scale and physical function was USD 5,181.22, compared to USD 437.87 for the group with a good outcome. By 12 months, the indicators had worsened for the group with negative results.

Economic efficiency with specific cases in physiotherapy has been examined by many researchers, but general data on pricing for rehabilitation services and the most favourable financial approaches in this field were not considered. The purpose of the study was to compare the costs of physiotherapy treatment in different countries to better understand the pricing of this service in the world and optimise the choice of rehabilitation complexes, followed by the formation of national rehabilitation programmes.

■ MATERIALS AND METHODS

For the study, information was sought with pricing for physiotherapy and other related services in private clinics in the United Kingdom, Slovenia, Germany, Switzerland, Spain, Ireland, Canada, New Zealand, Indonesia, and Australia. Private clinics that provide physiotherapy services, the prices of which were publicly available, were selected for analysis. Table 1 shows the clinics and their services

used in this study. As a standard treatment programme, a course of 10 sessions of physiotherapy treatment and 10 sessions of massage was taken. The lowest and highest cost of physiotherapy treatment and massage was calculated, depending on the time (30, 45, 60 minutes of therapy) and the cost per session. The cost calculations of the rehabilitation course are presented in the original currency and the main results were converted to the US currency for a better

understanding of the difference in prices. During the study, both individual and package offers for physiotherapy sessions and massage were compared to determine the benefits of buying packages in comparison with individual sessions. Package offers often included a certain number of sessions with a discount. In addition, the study paid attention to financial availability for physiotherapy with the use of telemedicine and visits of a specialist to the patient's home.

Table 1. Clinics and physiotherapy services provided

Country	Services
East London Physiotherapy and Sports Medicine Clinic in the United Kingdom	Physiotherapy of various levels (+packages of 5 and 10 sessions) and duration from 30 to 60 minutes; deep tissue massage; sports massage.
Floramare Health Resort clinic in Slovenia	Physiotherapy of various duration from 30 to 60 minutes; manual therapy; body massage of various duration from 15 to 45 minutes; massage packages of 3 and 5 sessions.
Health Centre at Maximiliansplatz Physiotherapy and Training Clinic in Germany	Physiotherapy of various duration from 30 to 60 minutes; classic massage of various duration from 20 to 60 minutes.
Zenith Physio Pilates clinic in Switzerland	Physical therapy with face-to-face meetings from 30 to 45 minutes; physical therapy from a virtual meeting; therapeutic massage from 60 to 90 minutes.
Valencia Physio clinic in Spain	Physiotherapy with different session duration from 30 to 60 minutes; package of 5 physiotherapy sessions 30-45 minutes; sports massage for 45 minutes; relaxing massage lasting 60 minutes; package of 5 massage sessions.
Nextlevel Physiotherapy Clinic in Ireland	Physiotherapy with different duration from 30 to 40 minutes; home visit of a physiotherapist lasting 45 minutes; online consultation of a physiotherapist with a 30-minute session; sports massage – 40 minutes.
Toronto Physiotherapy clinic in Canada	Physiotherapy with different directions with different duration from 30 to 60 minutes; massage with a session from 30 to 90 minutes.
Physio Melbourne clinic in Australia	Physiotherapy with telemedicine consultation of various duration from 25 to 60 minutes; classical and sports physiotherapy; restorative massage with sessions from 45 to 60 minutes.
The Studio Move Well clinic in New Zealand	Physiotherapy of various duration from 30 to 60 minutes in personal and group sessions; massage lasting 30 and 60 minutes.
Physioactive clinic of Indonesia	Physiotherapy with a visit to the clinic or a home visit of a specialist; online consultation with a physiotherapist or telemedicine treatment; classical massage.

Source: compiled by the authors

For the subsequent analysis, studies that examined the economic effectiveness of physiotherapy, massage, and rehabilitation were considered. Economic assessment of programmes and specific exercises and the addition of physiotherapy in parallel with classical treatment were considered.

■ RESULTS

Physiotherapy treatment in private clinics is conducted in a wide range. From the services provided in many clinics, rehabilitation is performed after surgical intervention, for headaches and migraines, neck and back pain, chronic pain, the consequences of injuries, osteoporosis, osteoarthritis, and other pathologies. Depending on the patient's condition and disease, a rehabilitation plan is drawn up indicating the number of necessary sessions. Payment

for the physical therapy assistance provided can be made at the expense of the patient or the insurance company with which the patient has a contract. Investing in physiotherapy, even at a relatively high cost, reduces the need for expensive medical intervention in the future, which is economically justified from the standpoint of a long-term perspective.

Table 2 shows the pricing of physiotherapy treatment at the East London Physiotherapy and Sports Medicine Clinic in the United Kingdom, considering the different levels and times per session. Based on the table, the minimum cost for 10 rehabilitation sessions of 30 minutes is GBP 550 (USD 721.62), and the maximum cost for 10 sessions of 60 minutes is GBP 1,386 (USD 1,818.49). For 10 massage sessions of 30 and 60 minutes, the cost ranges from GBP 600 to GBP 850 (USD 787.23-1,115.24), respectively.

Table 2. Price list for physiotherapy treatment in a private clinic in the United Kingdom

Physiotherapy (add. data)	30 minutes/GBP	45 minutes/GBP	60 minutes/GBP
Level 1	55	70	80
Tier 2	60	75	85
Tier 3	65	85	95
Tier 4	73	95	105
Tier 4 – Package of 5	347	451	499
Tier 4 – Package of 10	657	855	945
Tier 5	77	116	154
Tier 5 – Package of 5	366	551	732
Tier 5 – Package of 10	693	1,044	1,386
Massage			
Deep tissue massage	60	75	85
Sports massage	60	75	85

Source: compiled by the authors

In Slovenia, in the clinic Floramare Health Resort, a course of physiotherapy from 10 sessions of 30 minutes is EUR 300 (USD 331.1), which is the minimum indicator. The maximum cost for 10 sessions of 60-minute procedures is EUR 500 (USD 551.83). For 10 massage sessions

of 30 minutes, EUR 330 (USD 364.21) is charged, and for 10 sessions of 45 minutes – EUR 490 (USD 540.79). In this clinic, the maximum time for a massage session is 45 minutes. Table 3 shows the pricing of rehabilitation services in this clinic.

Table 3. Price distribution for physiotherapy and massage in the clinic Floramare Health Resort in Slovenia

Types of treatment	Time	Cost
Special procedures		
Physiotherapy treatment	60 min	EUR 50
Physiotherapy treatment	45 min	EUR 45
Physiotherapy treatment	30 min	EUR 30
Manual therapy		
Body massage	15 min	EUR 22
Body massage	30 min	EUR 33
Body massage	45 min	EUR 49
Therapeutic massage-a package of 3 massages	3×15 min	EUR 55
Therapeutic massage-a package of 5 massages	5×30 min	EUR 90

Source: compiled by the authors

Table 4 shows the price list for physiotherapy and massage treatment in a German clinic. For 10 sessions of physiotherapy treatment for 30 minutes at the Health Centre at Maximiliansplatz Physiotherapy and Training Clinic in

Germany, the cost will be EUR 450 (USD 496.64), for 10 sessions of 60 minutes – EUR 900 (USD 993.29). The cost of ten massage sessions for 30 minutes is EUR 400 (USD 441.46), for 60 minutes – EUR 800 (USD 882.92).

Table 4. Price list for physiotherapy and massage at the Health Centre at Maximiliansplatz Physiotherapy and Training Clinic in Germany

Name	Time	Price
Physiotherapy		
Physical therapy session	30 minutes	EUR 45
Physical therapy session	45 minutes	EUR 68
Physical therapy session	60 minutes	EUR 90
Massage		
Classical massage	20 minutes	EUR 27
Classical massage	30 minutes	EUR 40
Classical massage	40 minutes	EUR 54
Classical massage	60 minutes	EUR 80

Source: compiled by the authors

The Swiss clinic Zenith Physio Pilates has a price distribution for services in the following range: for 10 sessions of physiotherapy for 30 and 45 minutes, the cost varies from

USD 850 to USD 1,150, respectively. The cost of a massage for 10 sessions of 60 minutes is USD 1,100, while for 90 minutes – USD 1,350. Pricing for these services is shown in Table 5.

Table 5. Price list for physiotherapy and massage at Zenith Physio Pilates clinic in Switzerland

Service type	Session	Price
Physiotherapy		
Initial assessment	45 minutes	USD 115
Subsequent treatment	45 minutes	USD 115
Subsequent treatment	30 minutes	USD 85
Virtual meeting	45 minutes	USD 115
Massage therapy		
Therapeutic massage	60 minutes	USD 110
Therapeutic massage	90 minutes	USD 135

Source: compiled by the authors

In Spain, the Valencia Physio clinic provides services for a large number of rehabilitation methods, but Table 6 shows prices for physiotherapy and massage. For 10 sessions of physiotherapy treatment for 30-45 minutes, the

cost is EUR 400 (USD 441.46), for 60 minutes – EUR 500 (USD 551.83). Ten massage sessions of 45 or 60 minutes have a price range from EUR 450 (USD 496.64) to EUR 600 (USD 662.19).

Table 6. Cost of physiotherapy and massage clinic “Valencia Physio” in Spain

Name	Session	Price
Physiotherapy		
Assessment and treatment	60 minutes	EUR 50
Session	30-45 minutes	EUR 40
5 sessions of physical therapy	30-45 minutes	EUR 180
Massage		
Sports massage	45 minutes	EUR 45
Relaxing	60 minutes	EUR 60
Offer 5 massages	60 minutes	EUR 250

Source: compiled by the authors

The physical rehabilitation clinic in Ireland Nextlevel Physiotherapy also provides services for recovery from various diseases. Table 7 shows the cost of therapy in this clinic. For 10 sessions of physiotherapy procedures for 40 minutes, it is EUR 650 (USD 717.38). The

maximum cost for physiotherapy is noted for a session of 45 minutes home visit, which is EUR 1,000-1,200 (USD 1,103.65-1,324.39). This clinic performs massage only for 40 minutes, which for 10 sessions is EUR 650 (USD 717.38).

Table 7. Pricing for physiotherapy and massage at Nextlevel Physiotherapy Clinic in Ireland

Service	Duration	Price
Assessment and treatment of a physiotherapist	40 minutes	EUR 65
Subsequent appointment at the physiotherapy clinic	40 minutes	EUR 65
Online video consultation on physiotherapy	30 minutes	EUR 60
Sports massage	40 minutes	EUR 65
Visit to home physiotherapy	45 minutes	EUR 100-120

Source: compiled by the authors

The cost of physiotherapy treatment at the Toronto Physiotherapy Clinic in Canada is shown in Table 8. For recovery using 10 sessions of 30 minutes, the cost is USD 960,

and for sessions of 60 minutes – USD 1,490. The price for a massage for 30 and 60 minutes in the amount of 10 visits has fluctuations from USD 690 to USD 1,120.

Table 8. Price list for physiotherapy and massage clinic Toronto Physiotherapy in Canada

Name and time	Prices
Physiotherapy (Ortho/Sports, Neurology, Cancer)	
Initial assessment (60 minutes, including treatment)	USD 135
30 minutes	USD 96
40 minutes	USD 115
60 minutes	USD 149
Massage	
30 minutes	USD 69
45 minutes	USD 92
60 minutes	USD 112
90 minutes	USD 149

Source: compiled by the authors

Table 9 shows the prices for rehabilitation in the clinic Physio Melbourne Australia. Spending on 10 sessions of 30 minutes of physiotherapy and telemedicine

was USD 980, for 60 minutes – USD 1,650. The cost of 10 massage sessions of 45 minutes is USD 1,100, 60 minutes – USD 1,200.

Table 9. Cost of physiotherapy and massage at the Physio Melbourne clinic in Australia

Type of consultation	Duration	Cost
TELEMEDICINE CONSULTATIONS		
Physiotherapy – Primary	30 minutes	USD 98
Physiotherapy – Review	25-30 minutes	USD 88
Sports physiotherapy – Primary	30 minutes	USD 98
Sports physiotherapy-review	20-30 min	USD 88
Extended physiotherapy consultation (2 or more injuries)	55-60 minutes	USD 165
MASSAGE AND SOFT TISSUE THERAPY		
Restorative massage	45 minutes	USD 110
Restorative massages	60 minutes	USD 120

Source: compiled by the authors

New Zealand also provides rehabilitation and recovery services after injuries; the cost of these services is shown in Table 10. Ten sessions of physiotherapy treatment for 30 minutes will cost patients from USD 490 to USD 950, and for a session of 60 minutes – from USD 890 to USD 1,910. A massage of 10 sessions in 30 minutes is USD 920, and 60

minutes – USD 1,850. Table 11 shows prices for physiotherapy and massage in the Indonesian Clinic Physioactive. For 10 sessions of physiotherapy sessions, the cost ranges from IDR 9,300,000 (USD 590.21) to IDR 1,240,000 (USD 780.95). The cost of massage varies from IDR 6,200,000-9,300,000 (USD 394.75-592.12).

Table 10. Cost of physiotherapy and massage at the Studio Move Well in New Zealand clinic

Service type	30 minutes	40 minutes	60 minutes
Physiotherapy			
Group session	USD 49	USD 58	USD 89
Personal session	USD 95	USD 129	USD 191
Massage			
Personal session	USD 92	-	USD 185

Source: compiled by the authors

Table 11. Price list of physiotherapy and massage at the Indonesian Clinic Physioactive

Service	Price
Physiotherapy	
Initial assessment and treatment	IDR 9,300,000
Subsequent treatment	IDR 6,200,000-9,300,000-1,240,000
Home visit	IDR 1,860,000
Online physiotherapy-telemedicine	
Initial assessment and treatment	IDR 9,300,000
Subsequent treatment	IDR 6,200,000-9,300,000
Clinical massage	
1 session	IDR 6,200,000-9,300,000

Source: compiled by the authors

These data indicate that prices for physiotherapy treatment vary substantially depending on the country, which is related to the level of life and the cost of medical services. For example, the minimum costs for 10 sessions of physiotherapy in clinics in Eastern Europe (Slovenia – from USD 331) and South-East Asia (Indonesia – from USD 590) are much lower than in clinics in Western Europe (Great Britain – from USD 722) and North America (Canada – from USD 960). Indonesia, Slovenia, and Germany offer equally economically favourable conditions for patients. For example, in Germany and Slovenia, the cost of 10 sessions of physiotherapy varies from USD 331

to USD 552, which makes treatment affordable compared to the United Kingdom or Switzerland, where the cost can reach USD 1,818. Clinics use different treatment options that allow patients to choose between individual sessions and packages. Packages, as can be seen from the results in the tables, offer some benefit that increases the overall economic effectiveness of treatment. In Indonesia and the United Kingdom, payment options are offered for package services, thus reducing costs for patients who are prescript comprehensive treatment. In the context of the growing popularity of online physiotherapy, the cost of telemedicine services also varies. In Indonesia, an online

session is rated at USD 61, which is quite affordable compared to traditional visits.

In many clinics, including the United Kingdom, Indonesia, and Ireland, home visits have a substantially higher cost (from USD 118 in Indonesia to USD 1,324 in Ireland). This is due to additional costs for the departure of a specialist, which increases the cost of treatment. However, for patients with limited mobility, home visits can be an important option, despite their high price. Sessions of different duration are also evaluated differently, which affects the overall cost of treatment. For example, in Germany, the cost of one session of physiotherapy for 60 minutes is USD 99, while a 30-minutes one costs USD 50. Since the effectiveness of treatment may depend on the duration of each session, choosing between short and long sessions is an important aspect of the economic value of physiotherapy. That is, as can be seen from the results of the analysis; to improve economic efficiency, it is better to use package offers that help reduce overall costs, and telemedicine services that can reduce transport costs and increase availability. These measures are particularly relevant in countries with high levels of spending on medical services, such as the United Kingdom and Switzerland.

Prices for massage services also vary depending on the country and clinic, which reflects differences in the level of life and cost of medical care. The cost of 10 30-minute massage sessions in clinics in Germany and Slovenia ranges from USD 364 to USD 442, while in the United Kingdom, the same service will cost from USD 787 to USD 1,115. In Indonesia, the cost of massage varies from USD 395 to USD 592 for 10 sessions, which has a positive impact on its economic benefits compared to other countries. Package offers, similar to physiotherapy, can improve economic efficiency, which is beneficial for patients with chronic pain who need long-term massage courses. Clinics in Slovenia and the United Kingdom provide packages for massage sessions, which also helps patients reduce costs compared to individual payments. The cost of massage services increases with increasing session time. In Germany, for 10 sessions of massage for 60 minutes, one will have to pay USD 883, while 10 sessions for 30 minutes will cost USD 442. In Switzerland, the cost of 10 massage sessions is USD 1,100 for 60 minutes and USD 1,350 for 90 minutes. Thus, massage services, despite the difference in cost depending on the country and clinic, are economically effective in the context of long-term improvement of patients' health and quality of life. Package offers and the ability to choose the session time allow reducing total costs and increasing the availability of services for different groups of patients. Thus, to assess the economic value of physiotherapy treatment, it is necessary to consider the prices of services, the duration of sessions, the availability of telemedicine, and the offers of package services. A comprehensive approach to choosing a rehabilitation scheme, focused on reducing overall costs, can contribute to economically effective results and improve the quality of life of patients.

■ DISCUSSION

Research on the economic effectiveness of physiotherapy is necessary for optimal distribution of health resources and cost reduction. It allows choosing the most economically profitable methods, which increases the availability

of treatment for patients and affects the duration of treatment, improving the quality of life. Slowing the progression of Parkinson's disease through early physiotherapy rehabilitation in combination with drug therapy was examined by C. Zotaj *et al.* (2023). The results showed that the age group of 61-70 years was most affected, accounting for 73% of cases. Milder stages of the disease were observed in younger patients. The need to implement a standardised rehabilitation protocol was emphasised since early physiotherapy gave good results in the initial stages of Parkinson's disease. However, this paper did not consider the economic costs of treatment, unlike the current study. A study by S.J. Winsor *et al.* (2019) devoted to the economic assessment of fall prevention programmes for Parkinson's disease showed high efficiency of specific exercises. These interventions have helped reduce treatment costs and the number of falls, which indicates the profitability of physical exercises and physiotherapy in the long term. The authors focused on specific programmes to improve the quality of life of patients. Similarity with this study was in the economic benefit from the use of physiotherapy and massage.

Analysis by M. Ambrens *et al.* (2022) of the Standing Tall programme examination showed that the economic effectiveness of balance exercises for the elderly was limited. The cost of implementing the programme for one patient was USD 8,321 and the average cost of preventing a fall reached USD 4,785. The incremental cost for quality-adjusted life year (QALY) ranged from USD 58,039 to USD 110,698, which indicates the dubious economic feasibility of the programme for the entire population. However, another study by M.B. Pinheiro *et al.* (2022) also evaluated exercise programmes to prevent falls among the elderly, which in most cases turned out to be economically effective. Incremental cost-effectiveness ratio (ICER) varied from dominant interference up to USD 279,802 for QALY, which indicated substantial cost fluctuations depending on the type of interference and risk group. For people living in the community, exercise programmes showed a higher price-quality ratio, especially for older people with a high risk of falls. Like this study aimed at assessing the economic value of physiotherapy, attention was focused on the importance of reducing treatment costs and improving the quality of life.

Adding physiotherapy to traditional treatment in the study by J.J. van Summeren *et al.* (2022), it was not an economically effective strategy compared to traditional treatment alone. ICER for successfully treated children was USD 26,376, which indicated a substantial cost. The cost was substantially higher with questionable results. For the chronically used subgroup, ICER was lower – USD 2,339, which made the approach more cost-effective. In the author's paper, physiotherapy demonstrated high economic efficiency under the condition of using 10 sessions. A comparison of two models of physiotherapy treatment of cervical radiculopathy in a study by M.M. Ramirez & G.P. Brennan (2020) identified differences in economic efficiency and cost. Direct access to physiotherapy allowed the patient to save USD 434.3, and third-party payers – USD 3,264.75, while the effectiveness of treatment was 5 times higher in one visit than when contacting a doctor. The improvement in neck disability was also more substantial (16% versus 6%). This confirms the importance of effective use of resources to improve clinical results.

The patient-initiated virtual physical therapy (PIVPT) for patients with musculoskeletal diseases was reviewed by F. Chen *et al.* (2023). The analysis showed that PIVPT allowed saving from USD 1,116 to USD 1,523 per person per hour due to early access to physiotherapy and reduced treatment costs. The main economic factors were the accelerated start of therapy and reduced treatment costs. In addition, virtual therapy reduced the number of missed working hours by 6.6 hours per year. Compared to this study, both papers have confirmed the substantial economic value of physiotherapy. However, the author's research focused on the economic effectiveness of traditional physiotherapy, while this study demonstrated the advantages of virtual therapy. In terms of the cost of the service, PIVPT is more profitable, with lower treatment costs. The study by H. Ulfssdottir *et al.* (2023) evaluated the economic effectiveness of various methods of treating patients with intermittent claudication (IC), including a hospital supervised exercise programme (SEP), home-based structured exercise programmes (HSEP), and walking assistance (WA). It was established that SEP is substantially more expensive (USD 5,063.62 per patient) than WA (USD 1,952.44) and HSEP (USD 1,995.19), while the difference in QALY was statistically insubstantial. Compared with current research, it was demonstrated that more cost-effective approaches can be as effective as expensive interventions, and the importance of reducing costs without compromising the quality of treatment was emphasised. However, in the research by H. Ulfssdottir *et al.* (2023) SEP did not justify the cost, which indicates the need to use more affordable alternatives, such as HSEP and WA, for IC treatment.

The economic effectiveness of the cognitive-behavioural approach (CBA) and personalised exercise programme (PEP) for patients with rheumatic diseases described in the study H.Y. Chong *et al.* (2023), showed that both methods were more expensive than usual care. PEP proved to be more effective in improving the QALY compared to CBA. The cost of PEP was USD 743.63, and CBA – USD 1,104.33, while PEP led to an increase of 0.043 QALY. ICER in the size of USD 17,197 for QALY was considered an acceptable threshold for the United Kingdom. Unlike this study, PEP showed a higher cost but was recognised as economically effective in accounting for the health benefits received. The introduction of clinical practice guidelines (CPG) in the management of lower back pain in physiotherapy practice revealed a substantial reduction in direct and subsequent costs (Kosakowski *et al.*, 2024). After the introduction of CPG, direct costs for physiotherapy decreased from USD 3,459 to USD 2,863, which demonstrated an economic benefit. An additional reduction was recorded in subsequent expenses for visualisation, medications, and surgical interventions. Convergence with this study was the importance of reducing the cost of medical services and the tendency to reduce the financial burden due to more structured and early intervention. Proper use of physiotherapy and treatment protocols has improved economic efficiency.

In the study by A.T. Burge *et al.* (2024), the economic effectiveness of telehabilitation for patients with chronic respiratory diseases was analysed. It was established that this method is equivalent to traditional rehabilitation in the centre. Economic costs in both groups amounted to about USD 5,650, without substantial differences in the effective-

ness of treatment. For the TV rehabilitation of lung diseases, the main focus was on a remote format, which allowed patients to receive treatment at home while maintaining a similar effectiveness compared to the traditional approach. The economic benefits of telemedicine are also briefly indicated in the current study. Both models demonstrated good economic results using state-of-the-art technologies to expand access to treatment and reduce subsequent healthcare costs. The economic efficiency of rehabilitation in inoperable lung cancer showed that the cost of rehabilitation at home was USD 2,319.10, which is lower than usual care (USD 3,628.12) (Edbrooke *et al.*, 2021). However, the QALY results was close: 0.30 for rehabilitation and 0.31 for normal care. The ICER was USD 154,694 for QALY, which indicated high uncertainty. The net monetary gain was USD 1,022.27 in favour of interference. Comparing this study with the present one, which assessed the economic value of physiotherapy, there was a similarity in the desire for an economically effective result of treatment.

Physical exercises are an effective supplement therapy for cancer treatment, but their price-quality ratio has remained insufficiently examined (Wang *et al.*, 2023). It was established that 50% of cases of economic efficiency of physical activity were recognised in breast cancer. In 83% of the simulated economic estimates, the interference was economically effective. Physical exercises are economically effective in treating various types of cancer, especially when using analytical modelling to consider long-term benefits. This study confirms the importance of forming economically profitable rehabilitation programmes using physiotherapy. Physical exercises and physiotherapy have demonstrated high economic efficiency in the treatment of various diseases. The use of analytical modelling and virtual technologies will increase the economic profitability of interventions and reduce long-term costs. The results confirm the need to implement structured and economically profitable rehabilitation programmes.

■ CONCLUSIONS

Assessment of the economic value of physiotherapy treatment and massage showed that prices for these services varied depending on the country and clinic. In the United Kingdom and Switzerland, some of the highest prices were noted. In the East London clinic, the cost of 10 sessions of physiotherapy with varying duration ranged from USD 721.62 to USD 1,818.49, and massage – from USD 787.23 to USD 1,115.24 for 10 sessions. In Switzerland, 10 sessions of physiotherapy for 45 minutes were offered for USD 1,150, and a massage lasting 60 minutes cost patients USD 1,100. Slovenia and Indonesia are among the countries with the lowest prices for physiotherapy and massage. In the Slovenian clinic Floramare Health Resort, the cost of a course of 10 sessions of physiotherapy, depending on the time, was from USD 331.1 to USD 551.83, and the cost of the massage was in the range of USD 364.21 to USD 540.79. In Indonesia, the Physioactive clinic offered physiotherapy services for 10 sessions at a price of USD 590.21 to USD 780.95, and massage – for USD 394.75–592.12.

Thus, the cost of physiotherapy and massage services was substantially varied depending on the economic conditions and level of life in the country. High prices in the United Kingdom and Switzerland are associated with

a high quality of lifestyle, health care costs, and payment for the work of medical personnel. In countries with lower income levels, such as Slovenia and Indonesia, services were available at substantially lower costs, which made them more economically profitable for broad segments of the population. In addition, the cost of package courses of physiotherapy treatment and massage had the greatest financial benefit. In addition, reducing the cost of procedures, but maintaining efficiency helps to reduce the time of consultation or meeting and the introduction of telemedicine sessions into practice. The limitations of this

study were the different time frames of services provided, which made it difficult to compare the cost of treatment. Future research should be directed to the formation of national programmes that will help optimise the cost of physiotherapy treatment for the population.

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■ CONFLICT OF INTEREST

None.

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Оцінка економічної вартості фізіотерапевтичного лікування для отримання економічно ефективних результатів

■ **Анотація.** Мета дослідження – порівняти ціноутворення на фізіотерапевтичне лікування в різних країнах світу. Було проведено порівняльний аналіз вартості фізіотерапії у Великобританії, Німеччині, Словенії, Іспанії, Швейцарії, Ірландії, Канаді, Індонезії, Новій Зеландії та Австралії. Вартість фізіотерапії розрахована з урахуванням 10 сеансів на курс лікування в кожній клініці. Дослідження визначило, що вартість фізіотерапії та масажу суттєво відрізнялася залежно від регіону та медичного закладу. У лондонській клініці вартість 10 сеансів фізіотерапії коливається від 721,62 до 1,818,49 доларів залежно від тривалості процедур, а 10 сеансів масажу – від 787,23 до 1,115,24 доларів. У Швейцарії такий самий 45-хвилинний курс фізіотерапії коштує 1,150 доларів, а годинний масаж – 1,100 доларів. У Словенії та Індонезії фінансові витрати на ці процедури значно нижчі. У словенській клініці курс з 10 сеансів фізіотерапії коштує від 331,10 до 551,83 доларів, а масаж – від 364,21 до 540,79 доларів. В Індонезії такий же курс фізіотерапії пропонується за 590,21-780,95 доларів, а масажу – за 394,75-592,12 доларів. Вартість фізіотерапевтичних і масажних процедур безпосередньо пов'язана з рівнем життя та економічними умовами в країні. У Великобританії та Швейцарії високі витрати на охорону здоров'я пояснюються високим рівнем життя та розвинутою медичною інфраструктурою, тоді як у Словенії та Індонезії послуги є більш доступними для населення. Виходячи з цього, найбільш економічно вигідним рішенням для фізіотерапії та масажу є впровадження пакетних сеансів, що дозволяє знизити вартість одного сеансу в цілому. Крім того, фінансові витрати зменшуються за рахунок скорочення часу на процедуру та використання телемедицини під час реабілітаційного сеансу. Це дослідження допоможе оцінити ціноутворення на фізіотерапевтичні процедури та в подальшому оптимізувати національні схеми з формуванням найбільш фінансово ефективних програм

■ **Ключові слова:** вартість реабілітації; фінансові вигоди; витрати на терапію; рентабельність інвестицій; зниження витрат