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TAI CHI AS AN INNOVATIVE APPROACH IN PHYSICAL REHABILITATION: A CASE OF INSTITUTIONAL COOPERATION

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Abstract. *Tai Chi (Taijiquan, 太极拳), as a traditional Chinese practice, is increasingly recognized as a complementary method in contemporary physical rehabilitation and physiotherapy. The aim of this paper is to examine the possibilities of applying Tai Chi as an innovative therapeutic approach, with a particular focus on its integration into institutional rehabilitation settings. The paper is based on a review of recent research addressing the effects of Tai Chi on balance, motor function, chronic pain, and recovery following neurological and musculoskeletal conditions. Special attention is given to the example of cooperation between the Confucius Institute at the University of Banja Luka and the Institute for Physical Medicine and Rehabilitation "Dr Miroslav Zotović", within which physiotherapists have undergone training in the application of Tai Chi techniques in rehabilitation practice. The results indicate that Tai Chi contributes to improvements in mobility, postural stability, and overall physical fitness, particularly among elderly individuals and patients undergoing rehabilitation. Its low-intensity and adaptable nature allows for safe application across diverse patient groups. The integration of Tai Chi into physiotherapy practice reflects a broader trend of incorporating holistic and culturally grounded approaches into modern healthcare systems, as well as the importance of intercultural knowledge exchange in the field of medicine and rehabilitation.*

Keywords: *Tai Chi, physical rehabilitation, physiotherapy, intercultural cooperation, balance*

Introduction

Tai Chi (Taijiquan, 太极拳) is a traditional Chinese practice that combines slow, coordinated body movements, controlled breathing, and mental concentration. Although it originated as a martial art, it is now widely practiced throughout the world as a form of therapeutic exercise that promotes both physical and mental well-being. During the last two decades, Tai Chi has attracted considerable attention from researchers and healthcare professionals because of the growing body of scientific evidence supporting its beneficial effects on postural control, locomotor function, muscle strength, pain reduction, and quality of life among different patient populations. Randomized controlled trials and systematic reviews have shown that Tai Chi can be effectively incorporated into rehabilitation programmes for patients with musculoskeletal disorders, neurological diseases, and age-related functional decline [1, 2, 3].

Modern physical rehabilitation increasingly emphasizes patient-centred, multidisciplinary, and evidence-based approaches that improve functional recovery while minimizing the risk of adverse effects. Within this context, Tai Chi has gained recognition as a complementary therapeutic exercise because it is characterized by slow, low-impact movements that can be adapted to individuals with different levels of physical ability. Unlike many conventional exercise programmes, Tai Chi simultaneously develops postural stability, coordination, flexibility, postural control, muscle strength, breathing regulation, and body awareness. These characteristics make it particularly suitable for older adults, patients recovering from stroke, individuals with knee osteoarthritis, Parkinson's disease, chronic pain, and balance disorders. High-quality randomized controlled trials and systematic reviews have demonstrated that Tai Chi may produce functional improvements comparable to conventional physiotherapy in selected clinical conditions, particularly in patients with knee osteoarthritis, while also contributing to better psychological well-being and increased adherence to rehabilitation programmes [2, 4].

The growing acceptance of Tai Chi within rehabilitation medicine also reflects broader developments in integrative healthcare, where scientifically supported complementary methods are incorporated into conventional treatment programmes. Rather than replacing established physiotherapy techniques, Tai Chi is increasingly viewed as an additional therapeutic tool that may enhance rehabilitation outcomes when applied by trained healthcare professionals. Consequently, the successful implementation of such interventions depends not only on scientific evidence but also on professional education, interdisciplinary cooperation, and institutional support.

An important example of this approach can be found in the cooperation between the Confucius Institute at the University of Banja Luka and the Institute for Physical Medicine and Rehabilitation "Dr Miroslav Zotović". In 2019 [5], the two institutions organized a two-month Tai Chi training programme for approximately thirty physiotherapists employed at the Institute. The programme included education in standardized Yang-style (24 forms) and Chen-style (18 forms) Tai Chi under the guidance of certified instructors from the Confucius Institute. The objective of the programme was to enable physiotherapists to integrate selected Tai Chi exercises into existing rehabilitation programmes as complementary therapeutic activities intended to improve patients' overall physical condition and functional recovery. According to the organisers and participating physiotherapists, the acquired knowledge offered new possibilities for enriching existing kinesitherapeutic practice and introducing elements of Tai Chi movement philosophy into rehabilitation programmes.

The cooperation between the Confucius Institute and the Institute "Dr Miroslav Zotović" represents an example of successful interdisciplinary and intercultural collaboration, demonstrating how traditional Chinese health practices can be introduced into contemporary rehabilitation through professional education and institutional partnership. Rather than focusing solely on cultural promotion, this cooperation illustrates the practical application of knowledge transfer between higher education and healthcare institutions.

The aim of this paper is to review current scientific evidence regarding the application of Tai Chi in physical rehabilitation and to present the cooperation between the Confucius Institute of the University of Banja Luka and the Institute for Physical Medicine and Rehabilitation "Dr Miroslav Zotović" as a case study of institutional implementation of an evidence-based complementary rehabilitation approach.

Tai Chi as a Complementary Method in Physical Rehabilitation

Tai Chi as a Therapeutic Exercise

Tai Chi is a traditional Chinese practice that originated as a martial art but has gradually evolved into a widely accepted form of therapeutic exercise. Today, it is practiced worldwide not only for health promotion but also as a complementary intervention in the prevention and rehabilitation of various chronic conditions. Unlike conventional exercise programmes that often focus on strength, endurance, or flexibility separately, Tai Chi combines slow and continuous movements, postural control, coordinated breathing, and mental concentration into a single, integrated activity [1].

One of the distinguishing characteristics of Tai Chi is its classification as a mind–body exercise. This concept refers to interventions that simultaneously engage physical movement and cognitive processes, encouraging awareness of body position, breathing, and movement control. Rather than emphasizing speed or physical exertion, Tai Chi focuses on precision of movement, smooth transitions between postures, weight shifting, and maintenance of gait stability. Consequently, the exercise places relatively low mechanical stress on the joints while promoting coordination, flexibility, and postural stability [1, 6].

Another important characteristic of Tai Chi is its adaptability. The movements can be modified according to an individual's age, physical condition, and functional capacity, allowing participation by both healthy individuals and patients undergoing rehabilitation. Unlike many forms of physical exercise that require specialized equipment or facilities, Tai Chi can be performed individually or in groups, indoors or outdoors, making it an accessible intervention in both community and clinical settings [1].

The increasing interest in Tai Chi within rehabilitation medicine has been driven by a growing number of randomized controlled trials and systematic reviews investigating its clinical effectiveness. For this reason, Tai Chi is increasingly regarded not as an alternative to conventional rehabilitation but as a complementary therapeutic exercise that may be integrated into multidisciplinary rehabilitation programmes under the supervision of trained healthcare professionals.

Although Tai Chi has demonstrated promising results in numerous clinical studies, it should not be viewed as a standardized intervention. Different styles, forms, training

duration, session frequency, and instructor experience may influence clinical outcomes, making comparisons between studies challenging. Wayne and Kaptchuk (2008b) emphasized that Tai Chi represents a complex multicomponent intervention, and therefore its therapeutic effects cannot be attributed to a single mechanism or movement pattern. This complexity should be considered when interpreting research findings and designing rehabilitation programmes that incorporate Tai Chi into clinical practice.

Mechanisms of Action in Physical Rehabilitation

The therapeutic value of Tai Chi in physical rehabilitation is associated with its ability to simultaneously engage multiple physiological and functional systems. Consequently, its potential benefits are considered to result from the interaction of several complementary mechanisms rather than from a single therapeutic effect [1].

One of the principal mechanisms through which Tai Chi may contribute to rehabilitation is the improvement of postural control. The practice requires continuous weight transfer between the lower limbs, maintenance of an upright posture, and precise control of body movements during transitions between positions. These movement patterns stimulate proprioceptive input and challenge the neuromuscular system to maintain stability under continuously changing conditions. Systematic reviews have consistently reported that Tai Chi is associated with improvements in static and dynamic balance, particularly among older adults, and may reduce the risk of falls when incorporated into regular exercise programmes [7, 8].

Another important mechanism involves physical performance. Tai Chi movements emphasize coordinated lower-extremity activity, controlled gait, and gradual transfer of body weight, which may improve walking performance and functional independence. Evidence from studies involving stroke survivors suggests that Tai Chi may contribute to improvements in gait performance, and activities of daily living when used as an adjunct to conventional rehabilitation programmes [3, 9]. Although the magnitude of these effects varies across studies, the available evidence supports the inclusion of Tai Chi as a complementary exercise modality rather than a replacement for standard rehabilitation.

Tai Chi may also contribute to improvements in muscle function, particularly in the lower extremities. The slow execution of semi-flexed postures requires sustained muscle activation, especially of the quadriceps, gluteal muscles, and ankle stabilizers. Repeated practice may therefore enhance lower-limb strength, coordination, and postural endurance, all of which are important components of physical rehabilitation. Unlike resistance training, however, these adaptations are achieved through controlled body-weight movements rather than external loading, making Tai Chi suitable for individuals with limited physical capacity or reduced exercise tolerance [1].

Pain reduction represents another mechanism through which Tai Chi may support rehabilitation outcomes. Although the exact physiological pathways remain incompletely understood, clinical studies suggest that regular Tai Chi practice may reduce pain intensity and improve physical function in individuals with knee osteoarthritis and other chronic musculoskeletal conditions. Proposed explanations include improved joint mobility, enhanced muscular support around affected joints, increased physical activity, and psychosocial factors associated with regular group exercise [2, 10]. Nevertheless, current evidence does not support the interpretation that Tai Chi should replace established physiotherapeutic interventions, but rather that it may enhance rehabilitation when integrated into comprehensive treatment programmes.

In addition to its physical effects, Tai Chi incorporates elements of cognitive engagement and breathing regulation, which distinguish it from many conventional exercise programmes. Participants are required to maintain concentration, coordinate breathing with movement, and continuously adjust body position during exercise. These characteristics have led researchers to classify Tai Chi as a complex mind–body intervention involving simultaneous motor and cognitive processes [6]. Such integration may partly explain the observed improvements in movement quality, confidence during walking, and adherence to rehabilitation programmes reported in several clinical studies.

Despite these potential mechanisms, it is important to acknowledge that Tai Chi remains a heterogeneous intervention. Different styles, movement forms, training duration, instructor qualifications, and patient characteristics may influence treatment outcomes. Consequently, the precise mechanisms responsible for its therapeutic effects have not yet been fully established, and further high-quality randomized controlled trials are required to clarify the relative contribution of individual components of Tai Chi practice. Current evidence therefore supports its use as an evidence-informed complementary therapeutic approach within multidisciplinary rehabilitation rather than as an independent therapeutic modality.

Clinical Evidence for the Use of Tai Chi in Physical Rehabilitation

Knee Osteoarthritis

Among the various clinical applications of Tai Chi, the strongest evidence has been reported for patients with knee osteoarthritis (KOA). Osteoarthritis is one of the leading causes of pain, disability, and reduced mobility among older adults, and current treatment strategies emphasize non-pharmacological interventions alongside medical management. Exercise therapy is considered a cornerstone of rehabilitation, with the primary goals of reducing pain, improving physical function, and maintaining independence [11].

Tai Chi has been investigated extensively as a complementary exercise programme for individuals with knee osteoarthritis. One of the most influential randomized

controlled trials was conducted by Wang [2], who compared a 12-week Tai Chi programme with standard physical therapy in patients with symptomatic knee osteoarthritis. The study demonstrated that both interventions resulted in clinically meaningful improvements in pain and physical function. Importantly, Tai Chi was found to be non-inferior to conventional physical therapy regarding improvements in pain and physical function over the intervention period. Participants practicing Tai Chi also showed improvements in depressive symptoms and health-related quality of life, suggesting that the intervention may provide benefits extending beyond musculoskeletal function [2].

Earlier research by the same group reached similar conclusions. In a randomized controlled trial involving elderly patients with knee osteoarthritis, Wang [12] reported significant improvements in pain severity, physical function, self-efficacy, and quality of life after twelve weeks of Tai Chi practice compared with an attention-control programme. These findings provided some of the earliest high-quality clinical evidence supporting the integration of Tai Chi into rehabilitation programmes for osteoarthritis.

Evidence from systematic reviews further supports these observations. Lauche [13] analyzed randomized controlled trials evaluating Tai Chi in knee osteoarthritis and concluded that Tai Chi was associated with short-term improvements in pain, stiffness, and physical function. However, the authors also emphasized the considerable heterogeneity among studies regarding intervention duration, Tai Chi style, and outcome measures, highlighting the need for greater methodological standardization.

More recent evidence has strengthened these conclusions. A systematic review and meta-analysis by Hall [14] reported that Tai Chi was associated with reductions in pain and improvements in physical function across several chronic musculoskeletal conditions, particularly osteoarthritis. Similarly, Zhao [15] concluded that Tai Chi may represent a safe and effective rehabilitation modality for individuals with knee osteoarthritis, while noting that further large-scale randomized trials remain necessary to establish optimal exercise protocols and treatment duration.

The growing body of clinical evidence has also influenced international clinical recommendations. The 2019 American College of Rheumatology/Arthritis Foundation Guideline includes Tai Chi among the strongly recommended non-pharmacological interventions for patients with knee osteoarthritis. This recommendation reflects the accumulated evidence supporting Tai Chi as a safe, low-impact exercise capable of improving pain and physical function when incorporated into comprehensive rehabilitation programmes [11].

Although current findings are encouraging, Tai Chi should not be regarded as a replacement for individualized physiotherapy or multidisciplinary rehabilitation. Rather, existing evidence indicates that it may serve as an effective supportive

rehabilitation method, particularly for patients who can safely participate in structured movement programmes supervised by qualified healthcare professionals.

Stroke Rehabilitation

Stroke is one of the leading causes of long-term disability worldwide and frequently results in impaired postural stability, reduced mobility, muscle weakness, and limitations in activities of daily living. Consequently, rehabilitation programmes aim to restore motor function, improve walking ability, enhance postural control, and maximize functional independence. In recent years, Tai Chi has attracted increasing attention as a complementary exercise that may support conventional stroke rehabilitation by combining controlled movement, balance training, and cognitive engagement.

Evidence regarding the effectiveness of Tai Chi in stroke rehabilitation has grown considerably during the past decade. A systematic review and meta-analysis conducted by Lyu [3], which included randomized controlled trials involving stroke survivors, reported that Tai Chi was associated with improvements in stability, lower-limb motor function, walking ability, and activities of daily living. However, the authors emphasized that the overall quality of the available evidence ranged from low to moderate because many of the included studies involved relatively small sample sizes, different intervention protocols, and variations in methodological quality. Consequently, although the findings were encouraging, they recommended further large-scale randomized controlled trials before firm clinical conclusions could be drawn.

Similar observations were reported by Li [9], who specifically investigated the effects of Tai Chi on balance and gait after stroke. Their meta-analysis demonstrated improvements in walking performance and several measures of postural stability compared with conventional rehabilitation or usual care. Nevertheless, considerable heterogeneity among the included studies limited the strength of the conclusions. Differences in Tai Chi styles, programme duration, rehabilitation stage, and outcome assessment contributed to variability in treatment effects across studies.

The potential mechanisms underlying these improvements are consistent with the characteristics of Tai Chi practice. During exercise, participants repeatedly shift body weight, maintain postural alignment, and perform coordinated movements requiring continuous adjustment of the body's centre of gravity. In addition, the relatively slow pace of Tai Chi enables patients to focus on movement accuracy and postural stability, making the exercises suitable for individuals with reduced physical capacity.

Despite these encouraging findings, current evidence does not support replacing conventional stroke rehabilitation with Tai Chi. Instead, Tai Chi should be regarded as a complementary therapeutic approach that may enhance standard physiotherapy programmes in appropriately selected patients. Most authors agree that Tai Chi is most beneficial when introduced after the acute stage of stroke, under professional

supervision, and as part of a multidisciplinary rehabilitation programme rather than as a stand-alone intervention [3, 9].

Overall, the available evidence suggests that Tai Chi has the potential to improve functional recovery following stroke, particularly in relation to gait performance, and activities of daily living. However, further high-quality clinical trials with standardized intervention protocols are required to determine the optimal duration, intensity, and frequency of Tai Chi training in stroke rehabilitation.

Parkinson's Disease

Parkinson's disease is a progressive neurodegenerative disorder characterized by impaired balance, postural instability, bradykinesia, gait disturbances, and an increased risk of falls. These symptoms significantly affect functional independence and quality of life, making rehabilitation an essential component of long-term disease management. Because Tai Chi emphasizes controlled movements, postural stability, and weight transfer, it has been proposed as a complementary exercise programme for individuals with Parkinson's disease.

One of the most influential randomized controlled trials evaluating Tai Chi in Parkinson's disease was conducted by Li [4]. The study compared Tai Chi with resistance training and stretching exercises in patients with mild-to-moderate Parkinson's disease. Participants assigned to the Tai Chi group demonstrated greater improvements in postural stability, functional reach, stride length, and walking ability than those in the comparison groups. Furthermore, the number of falls recorded during the intervention period was significantly lower among participants practicing Tai Chi, suggesting a potential role in fall prevention.

Subsequent systematic reviews have generally confirmed these findings. Ni [16] concluded that Tai Chi may improve balance, motor function, and physical function in patients with Parkinson's disease while presenting a low risk of adverse events. Nevertheless, the authors also noted considerable methodological differences between studies, including variations in exercise protocols, disease severity, and follow-up duration. As a result, although current evidence supports the inclusion of Tai Chi within rehabilitation programmes, further high-quality randomized trials remain necessary to establish standardized treatment recommendations.

From a rehabilitation perspective, Tai Chi appears particularly valuable because it combines dynamic balance training with coordinated lower-limb movement and postural control in a relatively safe and low-impact manner. Rather than focusing solely on muscle strengthening, the exercise encourages continuous adjustment of body position and movement coordination, both of which are frequently impaired in Parkinson's disease. These characteristics make Tai Chi an appropriate additional therapeutic option for carefully selected patients participating in multidisciplinary rehabilitation programmes.

Chronic Musculoskeletal Pain

Chronic musculoskeletal pain is one of the most common causes of long-term disability worldwide and represents a major challenge for rehabilitation practice. Current clinical management emphasizes non-pharmacological interventions, including therapeutic exercise, patient education, and physiotherapy, as essential components of long-term treatment. Within this context, Tai Chi has been increasingly investigated as a complementary exercise programme for individuals experiencing persistent musculoskeletal pain, particularly those with osteoarthritis and chronic low back pain.

A systematic review and meta-analysis conducted by Kong [10] evaluated the effectiveness of Tai Chi across several chronic pain conditions and reported that regular Tai Chi practice was associated with reductions in pain intensity and improvements in physical function, especially among individuals with osteoarthritis. The authors suggested that the observed benefits were likely related to the combined effects of gentle physical activity, improved balance and mobility, increased muscle function, and the cognitive aspects of Tai Chi practice. However, they also emphasized considerable heterogeneity among the included studies with respect to patient populations, intervention protocols, and outcome measures.

Evidence regarding chronic low back pain is less extensive but generally encouraging. Qin [17], in a systematic review and meta-analysis of randomized controlled trials, reported that Tai Chi was associated with reductions in pain intensity and disability when compared with no intervention or usual care. Nevertheless, the authors highlighted that the overall quality of evidence ranged from low to moderate because of methodological limitations, relatively small sample sizes, and variability in intervention characteristics. Consequently, Tai Chi should be interpreted as a complementary rehabilitation strategy rather than a primary treatment for chronic low back pain.

Several mechanisms have been proposed to explain these findings. Regular Tai Chi practice may improve joint mobility, muscle endurance, postural alignment, and movement coordination while simultaneously reducing fear of movement and increasing confidence during daily activities. Because Tai Chi involves slow, controlled movements performed within a comfortable range of motion, it may be particularly suitable for individuals who experience pain during higher-intensity forms of exercise. Furthermore, participation in structured group programmes may enhance adherence to long-term physical activity, which represents an important factor in the management of chronic musculoskeletal conditions.

Despite these promising findings, the current literature does not support universal recommendations for Tai Chi in all chronic pain conditions. Most systematic reviews emphasize the need for standardized intervention protocols, longer follow-up periods, and larger randomized controlled trials before definitive clinical recommendations can be established. Therefore, Tai Chi should be regarded as an evidence-informed

exercise may be incorporated into individualized rehabilitation programmes according to the patient's clinical condition, rehabilitation goals, and professional assessment.

Current Clinical Recommendations

The growing body of scientific evidence has influenced the inclusion of Tai Chi in several evidence-based clinical recommendations. Rather than being viewed as an alternative therapy, Tai Chi is increasingly recognized as a complementary form of therapeutic exercise that may be incorporated into comprehensive rehabilitation programmes when clinically appropriate.

One of the strongest endorsements comes from the 2019 American College of Rheumatology (ACR) and Arthritis Foundation Guideline for the management of osteoarthritis of the hand, hip, and knee. Based on available evidence, the guideline strongly recommends Tai Chi for patients with knee and hip osteoarthritis as part of a comprehensive non-pharmacological management strategy [11]. This recommendation reflects consistent evidence demonstrating improvements in pain, physical function, and quality of life among individuals participating in structured Tai Chi programmes.

Similarly, the Ottawa Panel Clinical Practice Guidelines identified Tai Chi as a beneficial exercise intervention for individuals with knee osteoarthritis, reporting improvements in pain reduction, functional capacity, and health-related quality of life. The guidelines recommend Tai Chi as part of multidisciplinary rehabilitation rather than as a stand-alone therapeutic approach [18].

In the United States, the National Center for Complementary and Integrative Health (NCCIH) also recognizes Tai Chi as a safe and evidence-supported intervention for improving balance, reducing fall risk among older adults, and managing symptoms associated with osteoarthritis. NCCIH emphasizes that Tai Chi should complement, rather than replace, conventional medical care and rehabilitation, particularly in patients with chronic diseases.

Collectively, these recommendations demonstrate that Tai Chi has gradually moved beyond the domain of traditional exercise and complementary medicine to become an accepted component of evidence-informed rehabilitation in selected clinical populations.

Institutional Cooperation Between the Confucius Institute of the University of Banja Luka and the Institute for Physical Medicine and Rehabilitation "Dr Miroslav Zotović"

The integration of Tai Chi into rehabilitation practice requires more than scientific evidence alone. Its successful implementation also depends on interdisciplinary cooperation, professional education, and institutional support. In Bosnia and

Herzegovina, one of the first organized initiatives aimed at introducing Tai Chi into rehabilitation practice was established through the cooperation between the Confucius Institute at the University of Banja Luka and the Institute for Physical Medicine and Rehabilitation "Dr Miroslav Zotović". This collaboration represents an example of knowledge transfer between higher education and healthcare institutions, combining expertise in traditional Chinese culture with contemporary rehabilitation practice.

The cooperation was initiated with the objective of introducing selected Tai Chi techniques into rehabilitation programmes as complementary therapeutic exercises. Recognizing the growing scientific evidence supporting Tai Chi in rehabilitation, the two institutions developed a training programme intended primarily for physiotherapists employed at the Institute "Dr Miroslav Zotović". Rather than promoting Tai Chi as an alternative form of treatment, the programme aimed to familiarize healthcare professionals with its potential application within evidence-informed rehabilitation programmes.

According to information published by the University of Banja Luka [5], approximately thirty physiotherapists participated in a structured two-month training programme conducted by certified Tai Chi instructors. The educational programme included standardized 24-form Yang-style Tai Chi and 18-form Chen-style Tai Chi, both of which are internationally recognized and frequently used in educational and health-promotion programmes. Upon completion of the programme, participants received certificates confirming successful completion of the training, enabling them to apply selected Tai Chi exercises within their professional practice under appropriate clinical supervision.

The programme was designed with a practical orientation. In addition to learning the movement sequences, physiotherapists became familiar with the principles of posture, weight transfer, movement coordination, breathing techniques, and movement control that characterize Tai Chi practice. These components were considered particularly relevant for rehabilitation settings in which patients require gradual improvement of balance, mobility, coordination, and functional independence. Consequently, Tai Chi was introduced as a complementary exercise that could enrich existing kinesitherapeutic programmes rather than replace established physiotherapy interventions.

The cooperation also illustrates the broader role of the Confucius Institute beyond language and cultural education. While Confucius Institutes are primarily recognized for promoting Chinese language and culture, this project demonstrates their potential contribution to interdisciplinary cooperation through the transfer of evidence-informed traditional Chinese health practices into contemporary clinical settings. By connecting academic experts, certified Tai Chi instructors, and rehabilitation professionals, the initiative created opportunities for professional development while encouraging dialogue between different healthcare traditions.

From the perspective of rehabilitation practice, the project represents an important example of translating scientific evidence into clinical implementation. Previous clinical studies had already demonstrated the potential benefits of Tai Chi for improving balance, functional mobility, and physical function among patients with musculoskeletal and neurological disorders. The collaboration between the Confucius Institute and the Institute "Dr Miroslav Zotović" therefore illustrates how findings from international clinical research may be adapted to local healthcare practice through structured education and institutional cooperation. Although no formal clinical outcomes of the programme have yet been published, the initiative provides a valuable model for future interdisciplinary projects combining traditional movement-based exercise with evidence-based rehabilitation.

Finally, this cooperation highlights the importance of international academic partnerships in promoting innovation within healthcare. The exchange of knowledge between educational and medical institutions may facilitate the introduction of complementary rehabilitation approaches while respecting the principles of evidence-based medicine. In this regard, the cooperation between the Confucius Institute of the University of Banja Luka and the Institute for Physical Medicine and Rehabilitation "Dr Miroslav Zotović" represents an example of how intercultural collaboration can contribute to the diversification of rehabilitation practice and support the continuous professional education of healthcare personnel.

Discussion and Conclusion

The available scientific evidence demonstrates that Tai Chi has evolved from a traditional Chinese martial art into a clinically relevant complementary rehabilitation method. Current scientific evidence supports its application as a complementary therapeutic exercise, particularly in the rehabilitation of patients with knee osteoarthritis, Parkinson's disease, stroke-related disabilities, and age-related balance impairment.

At the same time, the available evidence should be interpreted with appropriate caution. Considerable heterogeneity exists among published studies regarding Tai Chi styles, intervention protocols, programme duration, and outcome measures. Therefore, although the overall results are encouraging, Tai Chi should not be regarded as a replacement for conventional physiotherapy or multidisciplinary rehabilitation. Instead, its greatest value lies in its integration into modern rehabilitation programmes as a complementary therapeutic intervention adapted to individual patient needs.

The cooperation between the Confucius Institute of the University of Banja Luka and the Institute for Physical Medicine and Rehabilitation "Dr Miroslav Zotović" demonstrates how scientific evidence may be translated into clinical practice through interdisciplinary and institutional collaboration. By providing structured Tai Chi training for physiotherapists, the project represents an example of responsible knowledge transfer that combines traditional Chinese health practices with

contemporary rehabilitation principles. Such initiatives illustrate the important role that academic institutions can play in promoting innovation in healthcare through international cooperation and professional education.

From a broader perspective, this case study confirms that intercultural cooperation may contribute not only to the promotion of Chinese language and culture but also to the dissemination of evidence-informed health practices with potential clinical value. The experience gained through this collaboration may serve as a useful model for similar initiatives involving educational institutions, rehabilitation centres, and healthcare professionals interested in integrating complementary therapeutic approaches into routine clinical practice.

Future research should focus on evaluating the clinical outcomes of Tai Chi implementation within rehabilitation institutions in Bosnia and Herzegovina. Prospective studies involving larger patient populations, standardized intervention protocols, and long-term follow-up would provide valuable evidence regarding its effectiveness in local clinical settings and contribute to the further development of evidence-based complementary rehabilitation strategies.

In conclusion, Tai Chi represents a scientifically supported complementary rehabilitation method whose integration into clinical practice requires both scientific evidence and appropriately trained healthcare professionals. The cooperation between the Confucius Institute of the University of Banja Luka and the Institute for Physical Medicine and Rehabilitation "Dr Miroslav Zotović" provides a practical example of how interdisciplinary collaboration can facilitate the implementation of innovative rehabilitation approaches while strengthening international academic and professional partnerships.

References

[1] Wayne, P. M.,, Kaptchuk, T. J. Challenges inherent to T'ai Chi research: Part I—T'ai Chi as a complex multicomponent intervention. The Journal of Alternative and Complementary Medicine, 14(1), 95–102. doi: 10.1089/acm.2007.7170a.

[2] Wang, C., Schmid, C. H., Iversen, M. D., Harvey, W. F., Fielding, R. A., Driban, J. B., Price, L. L., Wong, J. B., Reid, K. F., Rones, R.,, McAlindon, T. Comparative effectiveness of Tai Chi versus physical therapy for knee osteoarthritis: A randomized trial. Annals of Internal Medicine, 165(2), 77–86. doi: 10.7326/M15-2143.

[3] Lyu, D., Lyu, X., Zhang, Y., Ren, Y., Yang, F., Zhou, L., Zou, Y.,, Li, Z. Tai Chi for stroke rehabilitation: A systematic review and meta-analysis of randomized controlled trials. Frontiers in Physiology, 9, 983. doi: 10.3389/fphys.2018.00983.

[4] Li, F., Harmer, P., Fitzgerald, K., Eckstrom, E., Stock, R., Galver, J., Maddalozzo, G.,, Batya, S. S. Tai Chi and postural stability in patients with Parkinson's disease. The New England Journal of Medicine, 366(6), 511–519. doi: 10.1056/NEJMoa1107911.

[5] University of Banja Luka. Završena obuka fizioterapeuta u taiđiju [Completed Tai Chi training for physiotherapists]. Available from: https://www.unibl.org/sr-lat/vesti/2019/04/zavrsena-obuka-fizioterapeuta-u-taidjiju

[6] Wayne, P. M.,, Kaptchuk, T. J. Challenges inherent to T'ai Chi research: Part II—Defining the intervention and optimal study design. The Journal of Alternative and Complementary Medicine, 14(2), 191–197. doi: 10.1089/acm.2007.7170b.
[7] Huang, Z. G., Feng, Y. H., Li, Y. H.,, Lv, C. S. Systematic review and meta-analysis: Tai Chi for preventing falls in older adults. BMJ Open, 7(2), e013661. doi: 10.1136/bmjopen-2016-013661.
[8] Lomas-Vega, R., Obrero-Gaitán, E., Molina-Ortega, F. J.,, Del-Pino-Casado, R. Tai Chi for risk of falls: A meta-analysis. Journal of the American Geriatrics Society, 65(9), 2037–2043. doi: 10.1111/jgs.15008.
[9] Li, G. Y., Wang, W., Liu, G. L.,, Zhang, Y. Effects of Tai Chi on balance and gait in stroke survivors: A systematic meta-analysis of randomized controlled trials. Journal of Rehabilitation Medicine, 50(7), 582–588. doi: 10.2340/16501977-2346.
[10] Kong, L. J., Lauche, R., Klose, P., Bu, J. H., Yang, X. C., Guo, C. Q., Dobos, G.,, Cheng, Y. W. Tai Chi for chronic pain conditions: A systematic review and meta-analysis of randomized controlled trials. Scientific Reports, 6, 25325. doi: 10.1038/srep25325.
[11] Kolasinski, S. L., Neogi, T., Hochberg, M. C., Oatis, C., Guyatt, G., Block, J., Callahan, L., Copenhaver, C., Dodge, C., Felson, D., Gellar, K., Harvey, W. F., Hawker, G., Herzig, E., Kwoh, C. K., Nelson, A. E., Samuels, J., Scanzello, C., White, D., et al. 2019 American College of Rheumatology/Arthritis Foundation guideline for the management of osteoarthritis of the hand, hip, and knee. Arthritis Care, Research, 72(2), 149–162. doi: 10.1002/acr.24131.
[12] Wang, C., Schmid, C. H., Hibberd, P. L., Kalish, R., Roubenoff, R., Rones, R.,, McAlindon, T. Tai Chi is effective in treating knee osteoarthritis: A randomized controlled trial. Arthritis Care, Research, 61(11), 1545–1553. doi: 10.1002/art.24832.
[13] Lauche, R., Langhorst, J., Dobos, G.,, Cramer, H. A systematic review and meta-analysis of Tai Chi for osteoarthritis of the knee. Complementary Therapies in Medicine, 21(4), 396–406. doi: 10.1016/j.ctim.2013.06.001.
[14] Hall, A., Copsey, B., Richmond, H., Thompson, J., Ferreira, M., Latimer, J.,, Maher, C. G. Effectiveness of Tai Chi for chronic musculoskeletal pain conditions: Updated systematic review and meta-analysis. Physical Therapy, 97(2), 227–238. doi: 10.2522/ptj.20160246.
[15] Zhao, A., Brown, W. J., Coombes, J. S.,, Liu, X. The effects of Tai Chi on pain and other health indicators in people with osteoarthritis: An updated systematic review and dose-response meta-analysis. Osteoarthritis and Cartilage, 33(8), 933–950. doi: 10.1016/j.joca.2025.05.013.
[16] Ni, X., Liu, S., Lu, F., Shi, X.,, Guo, X. Efficacy and safety of Tai Chi for Parkinson's disease: A systematic review and meta-analysis of randomized controlled trials. PLOS ONE, 9(6), e99377. doi: 10.1371/journal.pone.0099377.
[17] Qin, J., Zhang, Y., Wu, L., He, Z., Huang, J., Tao, J., Chen, L.,, Enix, D. Effect of Tai Chi alone or as additional therapy on low back pain: Systematic review and meta-analysis of randomized controlled trials. Medicine, 98(37), e17099. doi: 10.1097/MD.0000000000017099.
[18] Brosseau, L., Taki, J., Desjardins, B., Thevenot, O., Fransen, M., Wells, G. A., Imoto, A. M., Toupin-April, K., Westby, M., Alvarez Gallardo, I. C., Gifford, W., Laferrière, L., Rahman, P., Loew, L., Angelis, G., Cavallo, S., Shallwani, S. M., Aburub, A., Bennell, K. L., et al. The Ottawa Panel clinical practice guidelines for the management of knee osteoarthritis. Part one: Introduction, and mind-body exercise programs. Clinical Rehabilitation, 31(5), 582–595. doi: 10.1177/0269215517691083.

[19] National Center for Complementary and Integrative Health. (n.d.). Tai Chi: What you need to know. U.S. Department of Health and Human Services, National Institutes of Health. Accessed July 17, 2026.

TAIĐIĆUEN KAO INOVATIVAN PRISTUP U FIZIKALNOJ REHABILITACIJI: PRIMJER INSTITUCIONALNE SARADNJE

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Sažetak. *Taiđićuen (kin. 太极拳 Taijiquan), kao tradicionalna kineska vještina, sve je više prepoznata kao komplementarna metoda u savremenoj fizikalnoj rehabilitaciji i fizioterapiji. Cilj ovog rada je da ispita mogućnosti primjene tehnike taiđićuena kao inovativnog terapijskog pristupa, sa posebnim fokusom na njenu integraciju u institucionalne rehabilitacione okvire. Rad se zasniva na pregledu savremenih istraživanja koja se bave efektima taiđićuena na balans, motoričku funkciju, hronični bol i oporavak nakon neuroloških i mišićno-koštanih oboljenja. Poseban akcenat stavljen je na primjer saradnje između Konfucijevog instituta Univerziteta u Banjoj Luci i Zavoda za fizikalnu medicinu i rehabilitaciju „Dr Miroslav Zotović“, u okviru koje su fizioterapeuti prošli obuku za primjenu tehnike taiđićuena u rehabilitacionoj praksi. Rezultati pokazuju da taiđićuen doprinosi poboljšanju funkcionalne pokretljivosti, posturalne stabilnosti i opšte fizičke spremnosti, naročito kod starije populacije i pacijenata u procesu rehabilitacije. Njegova niskointenzivna i prilagodljiva priroda omogućava sigurnu primjenu kod različitih grupa pacijenata. Integracija taiđićuena u fizioterapijsku praksu odražava širi trend uključivanja holističkih i kulturološki utemeljenih pristupa u savremene zdravstvene sisteme, kao i značaj interkulturalne razmjene znanja u oblasti medicine i rehabilitacije.*

Ključne riječi: *Taiđićuen, fizikalna rehabilitacija, fizioterapija, interkulturalna saradnja, balans*