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Review

# Reflexology: Historical Evolution of a Therapy Derived from Modern Medical Practice

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## Abstract

Reflexology is a complementary therapy based on the manual stimulation of reflex zones primarily located on the feet and hands. Its main therapeutic objective is to induce physiological responses aimed at functional regulation and the individual's overall well-being. Contemporary practice is grounded in neurophysiological mechanisms of reflex action, linked to somatovisceral integration and modulation of the nervous system. From a historical perspective, the therapeutic stimulation of the hands and feet can be observed in various ancient medical systems, particularly in traditional Eastern practices such as Traditional Chinese Medicine and Ayurveda, where these techniques are used within energetic and empirical models of bodily balance. However, these antecedents do not constitute reflexology in the strict sense, as they lack a formulation based on anatomofunctional correspondences mediated by the nervous system. This article presents a critical narrative review of the historical and conceptual evolution of reflexology, analyzing its transition from traditional Eastern practices to its consolidation as a complementary therapy within modern Western medicine. The contributions of nineteenth- and early twentieth-century physiology are examined, together with the clinical input of specialists of that period, which enabled the structuring of a reproducible and clinically grounded discipline. Finally, contemporary neurophysiological evidence is integrated to support its therapeutic principles and its responsible inclusion within an integrative health care approach.

**Keywords:** reflexology; foot reflexology; holistic reflexology; complementary therapies; history of reflexology

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## Introduction

Reflexology is regarded as a complementary therapy used within the field of well-being and integrative health in recent years. It is known for promoting relaxation and facilitating processes of physical and emotional self-regulation through the stimulation of specific reflex areas. Nevertheless, its origins as a therapeutic practice remain controversial: while some authors associate it with practices of traditional Eastern medicine [1], others emphasize its close relationship with the physiology of the nervous system and Western clinical medicine [2].

In Eastern cultures, contact with the body holds therapeutic and diagnostic significance. Through touch and manual pressure, practitioners seek to identify disturbances or energetic blockages within the organism and subsequently intervene upon them. The maintenance of health is considered to depend on the balanced flow of vital energy. This approach integrates observation, manual stimulation, and energetic harmonization as tools to support processes of well-being and disease prevention, offering a conceptual framework from which part of the historical foundation of reflexology can be understood [3].

From a Western physiological perspective, reflexology is a form of reflex stimulation therapy aimed at supporting processes of prevention, health promotion, and functional recovery. Through mechanisms of reflex stimulation, adaptive and regulatory processes within the organism are

facilitated, allowing reflexology to be integrated as a complementary tool within clinical medical care [2].

Based on a critical narrative review of scientific articles and books, this article aims to analyze the historical and conceptual antecedents of the therapy, both in its relationship with Eastern medical models and in its evolution within contemporary Western medical thought. It seeks to clarify the historical context and period in which the practice began to be properly defined as “reflexology” and to substantiate its understanding in coherence with the physiological principles that currently underpin it.

## Methodology

This article was developed using a narrative review and theoretical grounding design, with the aim of consolidating a timeline that allows for an understanding of the origins of reflexology as a therapy derived from medical practice.

A systematic documentary search was conducted in scientific databases using the following keywords: Reflexology, Holistic Reflexology, Complementary Therapies, and History of Reflexology.

Original articles, review papers, and texts published between 2000 and 2024 in English and Spanish that addressed the background and origins of reflexology were selected. Studies lacking clinical support or presenting an exclusively commercial or purely empirical approach were excluded.

The collected information was analyzed critically and comparatively, integrating findings from the cultural, historical, and medical perspectives characteristic of each period.

For the revision and translation of this manuscript, the artificial intelligence tool ChatGPT, GPT-5 model, developed by OpenAI, was used and configured to ensure that the data were not used for the training of artificial neural networks.

## Historical Background: From Eastern Practices to the Western Medical Model

The roots of reflexology can be traced to various ancient Eastern cultures in which the stimulation of specific body areas formed part of traditional practices aimed at health care and maintenance.

In Traditional Chinese Medicine (TCM), records dating back several centuries before Christ document the use of manual techniques for therapeutic purposes, such as massage and pressure applied to specific points on the body. Although modern reflexology is frequently associated with TCM, there is no evidence identifying it as such in the classical texts related to health care. In the *Huangdi Neijing*, known as *The Yellow Emperor’s Inner Canon*, translated by Veith (2002) [3], the theoretical foundations of Chinese medicine are described. These include the observation of bodily signs, diagnosis through pulse assessment, regulation of the flow of vital energy, and the balance of natural phenomena as expressions of health status. Manual techniques of massage and stimulation used to preserve health and treat ailments are mentioned. These foundations are centered on the dynamic harmony between opposing and complementary forces [4].

The stimulation of body points, including those located on the feet and hands, is incorporated into Traditional Chinese Medicine practices as a means of restoring the flow of vital energy, releasing energetic blockages, and promoting energy circulation (Zhou et al., 2011). These points represent an energetic conception of the human body which, although sharing with reflexology the pursuit of functional balance, cannot be considered its direct antecedent, as reflexology as a therapy emerged later, grounded in neurophysiological principles [11].

In these cultures prior to the Common Era, there was no concept of reflexology understood as a therapy based on anatomical correspondence between body areas and internal organs. Point stimulation served an energetic rather than a neurophysiological purpose. Therefore, while certain conceptual antecedents that later inspired the development of practices such as reflexology or acupuncture can be recognized, the idea that specific areas of the feet and hands can induce organic

reflex responses is a formulation intrinsic to modern Western medicine, which emerged in the twentieth century within the framework of complementary therapies.

In India, the traditional medical system is Ayurveda. Within this system, practices involving the stimulation of points on the feet are recognized as an integral part of health care. The classical text *Sushruta Samhita*, attributed to the ancient surgeon Sushruta, emphasizes the importance of areas on the head, ears, and feet for the application of therapeutic massage, indicating their relevance in promoting general well-being. Additionally, Ayurveda identifies specific points on the feet, known as *marmas*, which are believed to be connected to different organs and systems of the body. The stimulation of these points through practices such as *padabhyanga* (foot massage) was considered beneficial for maintaining balance and overall health [15].

Regarding the symbolic representation of the feet in Buddhist tradition, engravings found on the feet of Buddha include symbols that may be related to reflex zones, although their exact use is not specified. These Buddhist symbols, derived from religious and philosophical traditions, reflect an interest in health care, and their precise interpretation varies according to different traditions and cultural processes. In later therapeutic practices, point massage on the body was used to promote health [15].

In Egypt, reliefs found in the tomb of Ankhmahor, physician to the pharaoh, in Saqqara (Sixth Dynasty, ca. 2330 BCE), are popularly regarded as references to medical practices. With respect to reflexology and its presumed origin in this period, one relief depicts two practitioners manipulating the hands and feet of other individuals. This image led to the unfounded interpretation that reflexology originated in this civilization [10].

An analysis of this relief reveals that the postures of the individuals are deliberate and technical rather than accidental. The hand gestures indicate localized pressure rather than general friction. The scene does not depict a ritual or religious act, but rather a daily activity associated with bodily and medical care. These elements reinforce the idea of a conscious bodily intervention with the intention of providing relief or benefit. From a clinical perspective, this suggests a deliberate practice involving sensitive areas, compatible with manual stimulation or massage techniques. However, it cannot be asserted that this represents reflexology as it is defined today, nor that a reflex organ–zone map comparable to current models existed, as no evidence supports such claims. Nor can it be affirmed that this relief demonstrates direct methodological continuity between this practice and contemporary clinical reflexology.

What can be stated with substantiated evidence is that systematic manipulation of the hands and feet for therapeutic purposes existed in Ancient Egypt. These practices were integrated into medical knowledge rather than into a magical or mystical sphere. This was a period in which body care was considered essential for the reincarnation of the soul, and the care of the hands and feet was included within this context, as they were regarded as significant areas for overall health.

The relief from the tomb of Ankhmahor can be reinterpreted in light of the historical review by Metwaly et al. (2021) on traditional Ancient Egyptian medicine. These authors emphasize the value of such scenes as documentary sources of real medical practices integrated within an organized clinical system that included both manual and surgical procedures. Within this context, the scene depicting the manipulation of hands and feet can be understood as a manual medical intervention performed without instruments, consistent with the therapeutic practices described in Ancient Egyptian medicine [16].

Furthermore, it should be noted that the ancient Egyptians demonstrated advanced skills in the treatment of injuries to the feet and hands. The study of a mummy from the Eighteenth Dynasty revealed a congenital foot deformity, with ankle torsion and alterations in the tarsal bones, possibly due to poliomyelitis [17]. The existence of records documenting such deformities suggests detailed anatomical knowledge and possible treatments. In addition, prosthetic toes have been found among Egyptian remains, indicating practices of rehabilitation and care of the lower extremities [18].

Thus, the integrated analysis of the relief from the tomb of Ankhmahor and the historical review presented by Metwaly et al. (2021) allows the manipulation of hands and feet to be situated within

the framework of Ancient Egyptian traditional medicine, as a therapeutic practice recognized and performed by health professionals of the time. These iconographic representations, far from being mere symbolic or ritual elements, depict clinical procedures. Although it is not possible to establish direct technical continuity with contemporary clinical reflexology, the relief constitutes a significant historical antecedent that evidences an early conception of the body as a functional unit and of the hands and feet as therapeutic territories. This provides a coherent historical framework for understanding the later development of manual techniques with therapeutic purposes, including what is now known as reflexology.

Throughout history, therefore, different medical systems have incorporated the stimulation of areas on the feet and hands as part of health care processes. Today, reflexology is regarded as a complementary therapy. In earlier times, these practices shared the notion that the body responds integrally to localized stimuli, albeit without a formal physiological foundation. The transition toward clinical reflexology occurred in the nineteenth century, when studies of the nervous system and reflexes made it possible to scientifically explain the observed effects and to associate them with knowledge derived from ancestral cultures.

In summary, modern reflexology has a dual historical root:

- An Eastern tradition based on empirical experience and energetic balance.
- A Western medical tradition based on the scientific understanding of reflexes and nervous regulation.

## The Emergence of Reflex Action Therapies in Modern Medicine

The nineteenth century represented a period of profound transformation in medicine and in the conception of the human being. Within the context of Western societies transitioning toward more democratic and liberal models, intellectual movements emerged that fostered the pursuit of knowledge, spiritual meaning, and an integrative understanding of humanity. This period marked the shift from empirical medicine to a science grounded in observation, experimentation, and the systematization of knowledge [12].

Advances in anatomy, physiology, and microbiology during the nineteenth and twentieth centuries made it possible to identify microorganisms as causal agents of disease, revolutionizing prevention and treatment strategies. At the same time, surgical techniques were refined and the foundations of modern scientific medicine were consolidated. Within this expanding body of knowledge, alternative and complementary therapeutic approaches also emerged, exploring the relationship between body, mind, and the nervous system, as well as the understanding of the human being as an integrated whole. These practices sought to complement conventional treatments—often within a more natural context—or to provide therapeutic alternatives when standard medical interventions did not yield the expected results [12].

### 1. Neurophysiological Foundations of Reflexology in Western Medicine

Various European physicians of the nineteenth and early twentieth centuries explored the relationship between cutaneous points, pain, and internal organs, laying the physiological and empirical foundations of reflex therapies and providing the basis upon which reflexology would later consolidate itself as a complementary therapy in the twenty-first century.

Dr. Marshall Hall (1790–1857) described reflex action from a physiological perspective, defining it as the involuntary response of the nervous system to a peripheral stimulus. His work made it possible to understand the existence of visceral reflexes and the relationship between certain pain zones and deep-seated diseases. The concept of the reflex arc was adopted as a fundamental mechanism in the understanding of nervous disorders. Many of Hall's findings are presented in his article *On the Functions of the Medulla Oblongata and the Medulla Spinalis, and on the Excito-Motory System of Nerves* [13]. In this work, he proposed that the spinal cord is composed of a chain of units known as reflex arcs, each functioning as an independent entity. The function of each arc arises from the combined activity of sensory and motor nerves and the spinal segment from which

they originate. Moreover, these reflex arcs are interconnected with one another and with the brain to produce coordinated movements.

Dr. James Henry Mackenzie (1853–1925) was one of the pioneers in accurately describing the relationship between visceral pain and somatic reflex responses. His studies demonstrated that, in the phenomenon of pain, anatomical, functional, and reflex elements are interconnected through afferent and efferent pathways of the nervous system. Mackenzie proposed the concept of the viscerosensory reflex, establishing that stimuli originating in internal organs can produce sensory or motor responses in somatic regions distant from the original site of the lesion. This phenomenon is known as referred pain, that is, the perception of pain in a body area different from the location where the nociceptive stimulus originates. According to Mackenzie, this manifestation is due to the convergence of visceral and somatic nerve fibers onto the same neurons in the dorsal horn of the spinal cord, generating a misprojection of pain. This discovery enabled an understanding of the physiological basis of multiple cutaneovisceral and visceromotor reflexes and laid the foundations for reflex stimulation therapies that use the stimulation of reflex zones to modulate autonomic and somatic responses associated with internal organs [19].

The work of Sechenov (1829–1905) and Pavlov (1849–1936) was decisive in consolidating the scientific understanding of the reflex arc and the relationship between a stimulus and its response, concepts that would later be integrated into the physiological framework of reflex therapies. Sechenov postulated that all psychic and motor activity of the nervous system could be explained in terms of inhibitory reflexes. In his work *Reflexes of the Brain (Refleksy golovnogo mozga)*, he demonstrated that even mental processes have a physiological basis and that the organism's responses are the result of the integration and modulation of nervous stimuli. His work contributed to the understanding that the central nervous system not only generates automatic reflex responses but can also modulate and inhibit them, thereby establishing the foundations for the concept of adaptive regulation of the organism [9].

Subsequently, Pavlov expanded this concept with his theory of conditioned reflexes, demonstrating that physiological responses can be learned and modulated through experience. He studied gastric secretion in dogs, establishing that an initially neutral stimulus (such as a bell) could elicit a physiological response (salivary secretion) after being repeatedly associated with a biologically significant stimulus (food) [8,20]. These findings transformed the understanding of the reflex as a dynamic phenomenon, influenced by both the environment and neural memory. In this way, Sechenov and Pavlov established principles that allowed for an understanding of the interaction between the nervous, visceral, and somatic systems. This connection is essential for understanding how reflex stimulation can modulate organic functions through specific neurophysiological mechanisms.

At the beginning of the twentieth century, the British neurologist Dr. Henry Head (1861–1940) made fundamental contributions to the study of cutaneous sensitivity and its relationship with internal organs. In his investigations of patients with nerve injuries, visceral diseases, and herpes zoster, Head observed that certain areas of the skin exhibited alterations in sensitivity (hyperesthesia or hyperalgesia) associated with the involvement of specific organs [22]. These areas, later termed "Head's zones" or dermatomes, were described as delimited regions of skin innervated by a specific spinal nerve root. Head demonstrated that when an internal organ was irritated or diseased, the skin corresponding to its dermatome could manifest referred pain or changes in sensitivity, evidencing a functional interconnection between the somatic and visceral nervous systems [21]. A key finding of Head was that areas of hyperesthesia improved or disappeared when the visceral disease resolved, confirming the reflex nature of the phenomenon. This process was defined as the viscerocutaneous reflex, in which afferent stimulation from an altered organ is manifested on the cutaneous surface through shared neural pathways.

Head's work made it possible to understand referred pain and the peripheral reflex manifestations of internal processes, providing a solid physiological framework for modern clinical neurology. His conclusions were expanded by Sir Charles Sherrington, who further investigated the

functional integration of the nervous system and reflex mechanisms [23]. From this perspective, Head's studies constitute the basis for understanding the correspondence between reflex areas and organic functions, a principle later adopted by disciplines such as reflexology [24].

The German physician Dr. Alfons Cornelius (1867–1943) studied the relationship between cutaneous pain and internal diseases and developed a therapeutic approach based on the stimulation of painful points on the skin. In his work *Pressure Points: Their Origin and Significance*, Cornelius postulated that mechanical stimulation of certain sensitive areas favorably influenced the course of visceral conditions, establishing a bridge between clinical observation and the functional regulation of the organism. He described the existence of cutaneous zones of hypersensitivity associated with internal pathological processes, which could be identified by palpation. These zones not only reflected visceral alteration but, when stimulated with specific pressure, also produced a therapeutic reflex response. He classified points according to pain intensity and the depth of the affected tissue (skin, subcutaneous tissue, or deep musculature), observing that the patient's response varied depending on the pressure applied and the condition of the related organ [25].

Cornelius grounded his method in the viscerocutaneous reflex mechanisms previously described by Head and Sherrington. Thus, he postulated that massage or pressure on certain areas acted as an afferent stimulus capable of modulating the function of internal organs through the segmental reflex arc that connected them, contributing to the restoration of physiological balance. This approach integrated medical observation with a functional understanding of the nervous system, situating itself within the framework of reflex therapies. Cornelius's contributions anticipated concepts that would later be taken up by different schools of manual reflex therapies that recognize the functional projection of internal organs onto peripheral areas of the body [26].

The French urologist and physiopathologist Dr. Félix Guyon (1831–1920) expanded the understanding of the somatic manifestations of internal diseases by using the presence of painful cutaneous points as a diagnostic tool. In his clinical practice, he observed that certain regions of the skin could present hyperesthesia or hyperalgesia when alterations were present in related organs, a phenomenon that manifested reproducibly in patients with visceral pathologies. Guyon postulated that these painful points, identified through palpation, reflected irritation of visceral afferent nerve pathways expressed somatically through the spinal segmental network. This type of semiological exploration not only allowed localization of the area of internal involvement but also enabled monitoring of the evolution of the pathological process over time. It represented an early antecedent of functional diagnosis based on viscerocutaneous reflexes [21,27,28].

Guyon's findings provided clinical evidence supporting the studies of Head and Mackenzie, confirming the relationship between cutaneous stimulation and visceral activity. His diagnostic approach contributed to consolidating the idea that the skin acts as a mirror organ reflecting the internal state of the body.

The German physician and homeopath Dr. August Weihe (1840–1896) was among the first to systematically observe the appearance of specific painful cutaneous points in patients presenting the same clinical symptoms and responding to the same homeopathic remedies. He described more than one hundred such points consistently distributed throughout the body, which exhibited increased sensitivity in the presence of certain visceral disturbances [29]. Subsequently, Weihe verified that manual stimulation or pressure on these points produced therapeutic effects similar to those obtained with the corresponding homeopathic remedies, suggesting a reflex mechanism between the skin and internal organs. This observation anticipated the modern notion of somatovisceral reflex zones, in which an internal functional disturbance can be expressed peripherally as hypersensitivity or localized pain [30].

Although originally framed within homeopathy, Weihe's studies constitute a relevant antecedent for modern reflexology, as they propose the existence of a somatic network capable of reflecting the internal states of the organism and responding to modulating external stimuli.

Contemporary reflexologies, especially those with a clinical orientation, ground their historical foundations in these physiological studies of the nineteenth and twentieth centuries. Marshall Hall

described the reflex act and the reflex arc; Mackenzie explained the viscerosomatic reflex and referred pain; Sechenov and Pavlov demonstrated nervous regulation of organic functions through conditioned reflexes; Head identified cutaneous zones related to internal organs; and Cornelius, Guyon, and Weihe observed painful cutaneous points linked to visceral processes that responded to external stimulation. During this period, therapies emerged that sought to integrate advances in medical science with the body's natural processes, based on shared principles such as reflex stimulation, functional balance, and self-regulation of the organism. These bodies of knowledge consolidated the neurophysiological bases underlying the reflex principle applied in these practices.

In this way, reflexology can be understood as part of an integrative medical-physiological movement rather than as an isolated practice or one of mystical origin. However, it would still require additional time to become established as an integrative complementary therapy.

## 2. Fitzgerald's Contribution to Reflex Zone Therapy

William H. Fitzgerald (1872–1942), an American physician specialized in otorhinolaryngology, became interested in certain practices that emerged in the West at the beginning of the twentieth century based on the analgesic effects of pressure applied to different parts of the body. His approach arose within a context in which conventional medicine sought to relieve pain without necessarily resorting to invasive pharmacological agents, particularly during minor surgical procedures.

Interested in reflex stimulation and pain points, Fitzgerald observed that applying pressure to specific areas of the hands or feet could modulate the pain threshold. Based on this observation, he conducted clinical experiments in patients undergoing surgery, confirming that the application of pressure to what he termed "reflex zones" reduced the perception of local pain and produced a sensation of relaxation and overall well-being.

These findings led him to develop the theory that if the body were divided into ten longitudinal zones, each extending from the head to the feet, pressure applied to a distal area within one of these zones could influence another part of the same zone. This concept was presented in his work *Zone Therapy* [31], published in 1917 together with Edwin F. Bowers. The book describes a therapeutic technique based on pressure applied to specific points on the body (reflex zones) to alleviate various physical and emotional disorders. Each zone was thought to reflect the activity of specific organs and systems. Pressure applied to certain points could influence the functioning of related organs, producing therapeutic effects such as relief of headache pain, neuralgia, lumbago, reduction of nervous tension, improved blood circulation, stimulation of organic functions, and improvement of symptoms in conditions such as asthma, sinusitis, and digestive disorders.

The text also describes methods that patients could use on their own. These consisted of applying pressure to points related to their health problems, generating local anesthesia or correcting bodily imbalances. In addition, it incorporated supportive instruments such as combs and aluminum bands, surgical forceps, metal tongue depressors, and steel and nickel rings which, when placed on the fingers, were believed to relieve pain and irritation in various parts of the body. In this way, Fitzgerald established that zone therapy promoted tissue recovery and contributed to overall balance in the individual, and that it could be safely integrated with other clinical treatments [31].

The book *Zone Therapy* focuses primarily on clinical applications and effectiveness and does not propose hypotheses or develop formal theories to support the representation of the body on the feet or the mechanisms underlying its effectiveness. Nevertheless, it marked a milestone in integrative medicine by offering a practical and accessible approach to the management of various conditions through manual techniques that could be applied by a therapist or by the patient [31].

As a member of the American Medical Association (AMA), Fitzgerald introduced zone therapy into American medicine at the beginning of the twentieth century. His innovative technique made it possible to perform minor surgical procedures without conventional anesthesia. However, the traditional medical community showed significant resistance, viewing his method as a threat to established practice and potentially dangerous, which limited its acceptance within conventional medicine [32].

In the face of this opposition, Fitzgerald turned to professionals more open to alternative approaches. Zone therapy was well received among chiropractors, osteopaths, naturopaths, and dentists, who recognized its therapeutic value and incorporated the technique into their practices, leading to its popularization among the public interested in self-care methods and alternative medicine [33,34].

The transition of zone therapy from conventional medicine toward alternative and complementary medicine, as well as self-care practices, reflects the complex interaction between scientific innovation, professional resistance, and society's search for therapeutic solutions. Although reflexology has not been widely accepted within conventional medicine to this day, its development has influenced the evolution of complementary therapies that remain popular in contemporary health care.

### **3. Modern Reflexology: Method Simplification and Reflex Point Cartography**

The evolution of reflexology toward its modern form was marked by the work of Joe Shelby Riley, who focused on refining and systematizing William Fitzgerald's original method. Riley simplified the technique by eliminating most metallic instruments and accessories, such as rings, clamps, and depressors, demonstrating that direct manual pressure was sufficient to stimulate reflex points and produce therapeutic effects. He introduced the first detailed diagrams and drawings of reflex points located on the feet, enabling precise localization of the organs and systems associated with each area. These diagrams constituted a reflex cartography that not only standardized practice but also facilitated the teaching and reproducibility of the technique. Zone therapy thus became consolidated as an accessible, safe, and didactic complementary tool within manual therapy. Through these contributions, Riley laid the foundations for modern reflexology by integrating conceptual clarity and visual rigor that enabled its dissemination and professional application [32,34].

Zone Therapy Simplified was first published in 1919. This book presents an accessible and detailed version of zone therapy in which Riley explains the theoretical basis of the approach, highlighting the connection between different parts of the body and specific zones on the feet and hands. He expanded the original model of ten longitudinal zones proposed by Dr. William Fitzgerald by incorporating eight additional horizontal zones. This allowed for a more detailed and precise representation of reflex areas, facilitating the identification of specific points and zones for therapeutic stimulation [35].

The book provides step-by-step instructions for performing zone therapy, offering techniques and practical advice to maximize the benefits of this practice. Although the work is brief, its clarity and practical orientation make it accessible to both beginners and experienced practitioners [35,36].

Joe Shelby Riley was a key figure in the development of modern reflexology. His work had a significant influence on the evolution of the discipline, and his collaboration with Eunice Ingham—who later popularized the therapy—consolidated his legacy within the field of complementary therapies. Riley's work remains an essential reference for those seeking to understand and apply zone therapy effectively. His reflex point diagrams laid the groundwork for the modern foot and hand maps used in clinical reflexology. The method became more didactic and reproducible, contributing to its dissemination and to the development of professional reflexology.

### **4. From Zone Reflex Therapy to Reflexology: Eunice Ingham and the Consolidation of Modern Reflexology**

Eunice D. Ingham (1879–1974) was a physiotherapist and collaborator of Dr. Joe Shelby Riley. She carried out a clinical and functional reorganization of Riley's methods and diagrams, focusing her work on the feet and on the reflex responses observed during therapeutic practice. Between 1930 and 1940, she developed a detailed description of reflex zones, specifying their location and their physiological relationship with specific organs and body structures. In her early experiences, she employed various stimulation instruments, such as rollers and probes; however, she later prioritized direct manual application, as it allowed for a more refined perception of tissue response [39,40].

Her works *Stories the Feet Can Tell* and *Stories the Feet Have Told Through Reflexology* consolidated this method and disseminated, for the first time, the term Reflexology, presenting it as a practice based on reflex stimulation aimed at promoting circulation, relieving pain, and supporting the body's self-regulatory processes [37,38].

### 5. Comparative Analysis: Fitzgerald, Riley, and Ingham in the Evolution of Modern Reflexology

Modern reflexology originated in the zone theory proposed by William H. Fitzgerald, who established the foundational link between body regions and distal reflexes. Subsequently, Joe Shelby Riley and Eunice Ingham reformulated his postulates, progressively contributing greater cartographic precision, methodological structure, clinical criteria, and technical accessibility. This comparative analysis summarizes the main differences and convergences among their approaches, highlighting how successive contributions transformed an experimental proposal into a structured therapeutic discipline.

#### Fitzgerald's Theory

**Period:** 1917, Zone Therapy

**Main characteristics:**

The body was divided into ten longitudinal zones extending from the head to the feet, with five vertical zones for each body hemisphere, represented on each foot.

The diagrams were basic, illustrating general zone correspondences rather than precise points.

The focus was placed on the concept of zones connecting distal and proximal areas, rather than on detailed organ maps on the foot.

**Techniques:** Use of instruments. Metallic tools and accessories were employed to apply pressure to the zones.

#### Riley's Theory

**Period:** 1919, Zone Therapy Simplified

**Main characteristics:**

Developed the first precise diagrams of reflex points on the foot, dividing it into five vertical zones and eight horizontal zones.

Demonstrated the exact location of organs and systems associated with each point.

His approach enabled systematization and teaching, making reflexology reproducible.

**Technique:** Eliminated most instruments, using only direct manual pressure, thereby simplifying the practice and making it more accessible and safe.

#### Ingham's Theory

**Period:** 1948, *Stories the Feet Have Told Through Reflexology*

**Main characteristics:**

Built upon the foundations of zone therapy and completed the functional cartography of the foot based on clinical observation.

Reorganized Riley's maps, refining the anatomical relationship between reflex zones and internal organs, and introduced a physiological interpretation of reflex responses.

Proposed the term Reflexology to designate the therapy, differentiating it from the original zone therapy.

**Technique:**

For many years, she used highly elaborate stimulation instruments, but later prioritized manual work due to its greater sensitivity and adaptability.

Promoted systematized sessions with clearly defined therapeutic objectives.

### 6. From historical evolution to contemporary neurophysiological evidence

Following the dissemination of Eunice Ingham's method, reflexology began to expand internationally, particularly within the fields of physiotherapy, nursing, and complementary therapies. At the same time, it experienced a return to its Eastern and mystical roots, giving rise to

currents with Eastern-oriented and holistic–mystical approaches within the framework of alternative therapies.

During the second half of the twentieth century, various authors and schools incorporated foundations derived from neurophysiology, reflexotherapy, and clinical podiatry, which made it possible to reformulate the practice in terms of reflex stimulation and functional regulation. Reflexology ceased to be conceived as an empirical technique and came to be understood as a complementary intervention aimed at promoting the body's homeostatic processes, integrable within clinical practice.

By the late twentieth and early twenty-first centuries, different research efforts enabled the refinement of foot cartography, producing more precise representations adapted to modern anatomical and physiological knowledge and, above all, advancing the understanding of neurophysiological mechanisms in order to integrate reflexology into medical practice. Thus, reflexology with a clinical orientation emerged [2].

Currently, reflexology is studied and applied in both conventional and complementary healthcare settings, maintaining as its fundamental principle the stimulation of specific reflex zones to promote physiological responses of adaptation and balance. This historical process, initiated by Fitzgerald and continued by Riley and Ingham, constitutes the foundation of contemporary methods that seek to restore function and harmony in the individual through the physiological understanding of reflexes and systematic therapeutic observation.

Recent studies have demonstrated that reflexological stimulation activates specific brain areas and modulates autonomic nervous system activity, promoting relaxation, physiological regulation, and the perception of well-being. These findings support the understanding of reflexology as a complementary therapy with a regulatory action, grounded in measurable and reproducible neurophysiological mechanisms.[5–7]

In this context, the article by Dávila, M. A. (2025) [2] proposes an updated definition of the therapy within the framework of contemporary medicine:

*“Reflexology is a complementary therapy that acts through the stimulation of reflex zones located on the feet and hands. Its objective is to induce distant physiological responses in related organs or systems, and its action is based on reflex mechanisms, the involvement of higher centers of the nervous system, and the organization of reflex microsystems operating through polysynaptic networks.”*

In this way, reflexology is consolidated as a complementary practice within an integrative clinical approach, capable of supporting processes of prevention, health promotion, and functional recovery, fostering mechanisms of self-regulation and adaptive responses of the organism.

## Discussion

The historical trajectory shows that reflexology is not an esoteric practice, but rather a technique with medical and physiological roots. The combination of Eastern empirical observation, focused on the relationship between areas of the foot and bodily energy, and Western scientific explanation, based on Fitzgerald's zone theory and the functional cartography developed by Riley and Ingham, enabled its consolidation as a clinical complementary therapy.

Knowledge of its origins and foundations makes it possible to redefine reflexology as a practice supported by scientific principles, legitimizing its inclusion within integrative healthcare systems and promoting its controlled investigation. This historical and scientific perspective facilitates a more precise understanding of its mechanisms of action, highlighting that stimulation of reflex zones can induce measurable physiological responses, modulate autonomic nervous system activity, and promote processes of self-regulation and well-being.

A critical review of contemporary evidence suggests that reflexology may be incorporated as a complementary component within clinical protocols aimed at prevention, health promotion, and

functional recovery, provided that criteria of safety and professionalization are met. Likewise, recognition of its neurophysiological basis and the systematization of its techniques contribute to reducing the perception of subjectivity associated with its practice, thereby favoring its academic and clinical acceptance.

In this sense, reflexology represents a bridge between empirical tradition and evidence-based clinical practice, consolidating itself as a complementary tool that, when correctly applied, can support physiological regulation and improve patients' quality of life within an integrative approach.

### Limitations and Future Perspectives

Despite advances in the systematization, methodology, and study of reflexology, important limitations remain in the available evidence. Most studies have focused on indirect physiological effects, with small sample sizes and heterogeneous designs, which hinders the generalization of results. In addition, there is an ongoing need for standardized protocols and objective measurements that allow comparisons across different clinical settings and populations.

Regarding future perspectives, the importance of integrating reflexology into controlled and multidisciplinary research is emphasized, combining clinical, physiological, and neurophysiological methods. This approach would allow a more precise evaluation of its efficacy, safety, and mechanisms of action, thereby strengthening its inclusion in integrative health programs. Likewise, evidence-based professional training and systematic documentation of clinical practice will contribute to consolidating reflexology as a reliable complementary therapy, capable of supporting processes of prevention, health promotion, and functional recovery in diverse clinical contexts.

### Conclusions

By integrating ancient Eastern traditions with Western medical foundations, reflexology has evolved into a clinical practice grounded in the neurophysiology of reflexes. By moving away from myths and historical cultural conceptions, it is possible to substantiate reflexology as a complementary therapy based on reflex action, capable of inducing measurable physiological responses and promoting the organism's self-regulatory processes.

Recognizing its dual historical roots allows reflexology to be appropriately positioned within integrative healthcare, ensuring its safe, informed, and scientifically supported application. Its practice can accompany processes of prevention, health promotion, and functional recovery, integrating complementarily with conventional approaches.

Despite these advances, the available evidence presents limitations: studies are heterogeneous, with small sample sizes and varied protocols, which makes generalization of results difficult. Therefore, it is essential to promote controlled research, standardized protocols, and systematic clinical documentation to more accurately evaluate the efficacy, safety, and mechanisms of action of reflexology.

In summary, reflexology represents a bridge between empirical tradition and evidence-based clinical practice, consolidating itself as a reliable complementary tool within integrative medicine, with the potential to improve quality of life, physiological regulation, and patient well-being. Its historical, methodological, and scientific development establishes the foundations for its continuity and expansion in modern clinical contexts, always under criteria of professionalization, safety, and scientific support.

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