*International Journal of Health Sciences and Research*
*Volume 14; Issue: 11; November 2024*
*Website: www.ijhsr.org*
*Review Article* *ISSN: 2249-9571*

# Reverse Kegels Unveiled: A Modern Solution for Coccydynia

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**DOI: https://doi.org/10.52403/ijhsr.20241143**

## ABSTRACT

Coccydynia, commonly referred to as tailbone pain, is a condition characterized by discomfort or pain localized to the coccyx, affecting daily activities and quality of life. This condition can be triggered by trauma, prolonged sitting, childbirth, or other factors causing inflammation or injury to the coccyx. Coccydynia is relatively rare but disproportionately affects females due to anatomical differences, such as a wider pelvic angle and reduced coccygeal mobility. The causes are diverse, with many cases following traumatic events, repetitive strain injuries, childbirth, or biomechanical issues, though a significant portion remains idiopathic.

Symptoms are often aggravated by prolonged sitting, direct pressure on the coccyx, or transitioning from sitting to standing, leading to significant functional limitations and reduced quality of life. Diagnosis typically involves a clinical history, physical examination, and imaging studies like dynamic radiographs and MRI, which can identify abnormal coccygeal mobility. Treatment ranges from conservative approaches, including physical therapy and localized injections, to surgical options such as coccygectomy. Despite these interventions, treatment outcomes vary, and no standardized management protocols exist.

This review synthesizes recent studies on coccydynia, discussing its biomechanical and physiological aspects, diagnostic strategies, and therapeutic approaches. By analysing evidence-based practices, this paper aims to inform clinical decision-making and enhance patient outcomes in managing this challenging condition.

***Keywords***: Coccydynia, Tailbone pain, Coccyx injury, Chronic pain, Conservative treatment, Coccygectomy

## INTRODUCTION

Coccydynia, is commonly referred to as tailbone pain. Coccydynia Is a condition characterized by discomfort or pain localized to the coccyx. This condition can be quite distressing, affecting daily activities and quality of life. The pain may result from trauma, prolonged sitting, childbirth, or other factors that cause inflammation or injury to the coccyx.

Coccydynia, a condition defined by persistent pain in the coccyx or tailbone region, represents a unique and often under-recognized musculoskeletal disorder.

Situated at the base of the vertebral column, the coccyx is a small, triangular bone that plays a crucial role in stabilizing the body when seated and serves as an attachment site for various muscles, ligaments, and tendons. Although coccydynia is relatively rare, it disproportionately affects females, a trend attributed to anatomical differences such as a wider pelvic angle and reduced coccygeal mobility in women, which increase susceptibility to trauma and stress on the tailbone (Maigne et al., 2000).

The causes of coccydynia can be diverse and multifactorial. In many cases, the onset of pain may follow a direct traumatic event, such as a fall or injury that exerts sudden force on the coccyx. Repetitive strain injuries, childbirth, and certain biomechanical issues- such as abnormal coccygeal alignment- can also contribute to coccydynia. However, despite advanced radiological imaging techniques and diagnostic modalities, a substantial portion of cases remain idiopathic, with no clearly identifiable cause, further complicating the diagnosis and treatment process (Fogel et al., 2004). These idiopathic cases underscore the need for a nuanced and individualized approach to patient evaluation.

Pain symptoms in coccydynia are often aggravated by prolonged sitting, direct pressure on the coccyx, or activities that require shifting from sitting to standing. In severe cases, this chronic pain can interfere with daily activities, causing significant limitations in function and reducing the quality of life for those affected (Woon et al., 2013). Diagnostic evaluation typically begins with a detailed clinical history and physical examination, followed by imaging studies, such as dynamic radiographs and MRI. Dynamic imaging has been shown to provide valuable insights into abnormal coccygeal mobility, which can differentiate coccydynia from other sources of lower back and pelvic pain (Kim et al., 2015).

Management of coccydynia ranges widely from conservative to surgical approaches. Initial treatment strategies focus on non-invasive methods, including physical therapy, postural correction, coccygeal manipulation, and localized injections of corticosteroids or anaesthetics. In cases where conservative measures fail to alleviate symptoms, surgical intervention, particularly coccygectomy (removal of the coccyx), may be considered. Nevertheless, treatment outcomes can vary significantly, and there is a lack of consensus on standardized management protocols, making coccydynia a challenging condition to treat effectively (Lirette et al., 2014).

Emerging research has begun to shed light on the biomechanical and physiological underpinnings of coccydynia, sparking interest in developing novel, minimally invasive treatment options. This paper aims to synthesize findings from recent studies and provide a comprehensive review of the current diagnostic and therapeutic strategies for coccydynia. By analyzing evidence-based practices, this work seeks to inform clinical decision-making and improve patient outcomes in managing this often-debilitating condition.

## ANATOMY OF THE COCCYX

The coccyx, or tailbone, is a triangular bony structure positioned at the caudal end of the vertebral column and is composed of three to five vertebral segments that fuse in adulthood. It functions as a vestigial structure, a remnant of a tail present in human ancestors, yet it plays an essential role in the biomechanics of the pelvis. Structurally, the coccyx contributes to the tripod of support for the pelvis, alongside the ischial tuberosities on either side, by distributing weight when a person sits, especially in a reclined posture (Postacchini & Massobrio, 1983). Its unique shape and position render it prone to stress injuries, trauma, and degenerative changes, which can result in coccydynia, a pain condition specific to the coccyx region.

The coccyx is surrounded by key muscular and ligamentous structures that provide stability and facilitate movement. Anteriorly, it is bordered by the levator ani muscle, a primary component of the pelvic floor. This

muscle group is responsible for supporting the pelvic organs, aiding in continence, and providing stability during core movements (Lawrence et al., 2011). The sacrococcygeal ligament, which connects the coccyx to the sacrum, reinforces stability, preventing excessive motion between these segments and maintaining the coccyx's alignment with the sacral spine (Foye et al., 2007).

The lateral edges of the coccyx serve as critical attachment points for several structures. These include the coccygeal muscles, the sacrospinous ligament, and the sacrotuberous ligament, all of which contribute to pelvic stability. Additionally, fibers of the gluteus maximus muscle insert onto the coccyx. The gluteus maximus is one of the most powerful hip extensors, and its attachment to the coccyx provides additional reinforcement, impacting posture and balance when seated or in transition from sitting to standing (Gray et al., 2015). Such complex anatomical connections underscore the role of the coccyx in not only weight distribution but also in overall pelvic function and stability.

## PELVIC FLOOR MUSCLES

1. Levator Ani: The levator ani muscle group is a critical part of the pelvic floor musculature, forming a muscular sheet that stretches across the pelvis and supports the abdominal and pelvic organs. This muscle group is subdivided into three main muscles—the pubococcygeus, puborectalis, and iliococcygeus. The pubococcygeus runs from the pubic bone to the coccyx and plays a key role in maintaining continence by controlling pressure around the urethra and anus (DeLancey, 1999). The puborectalis, which forms a sling around the rectum, is essential for maintaining the anorectal angle, which is crucial for continence and defecation. The iliococcygeus extends from the ilium to the coccyx, providing structural support to the pelvic organs and playing a role in the overall integrity of the pelvic floor (Stoker et al., 2009).
2. Coccygeus Muscle: The coccygeus muscle, also known as the is chiococcygeus, is located posterior to the levator ani and extends from the ischial spine to the lateral aspect of the coccyx and lower sacrum. This muscle assists the levator ani in stabilizing the pelvic floor and provides additional support to the pelvic viscera, especially when intra-abdominal pressure increases, such as during lifting or straining (Herschorn, 2004). The coccygeus muscle also contributes to anterior flexion of the coccyx, which helps in activities that require pelvic floor contraction, such as defecation and childbirth. Given its attachments and function, this muscle plays a minor but essential role in overall pelvic floor stability.

Together, the levator ani and coccygeus muscles, along with the surrounding ligaments, provide a sturdy foundation for the pelvis. They are crucial not only for supporting the pelvic organs but also for enabling essential functions like continence, sexual function, and the physical stability of the core (Ashton-Miller & DeLancey, 2007). These structures also interact dynamically with the coccyx, and any injury, misalignment, or inflammation in the coccygeal region can impact pelvic floor function, contributing to conditions like coccydynia.

## CLINICAL PRESENTATION OF COCCYDYNIA

Coccydynia, or tailbone pain, can present through a variety of symptoms, with pain ranging from acute to chronic. The type and intensity of pain are often influenced by underlying causes, such as trauma, repetitive strain, or prolonged poor posture.

**Acute Pain:** Patients may experience sharp, intense pain localized around the coccyx, particularly after direct trauma, such as a fall or injury to the tailbone area. This acute pain is commonly felt during activities that involve pressure on the coccyx, including sitting or transitioning from a seated to a

standing position. The nature of this pain is often sudden and sharp, sometimes radiating to the surrounding tissues, making it difficult for patients to find a comfortable sitting position (Postacchini & Massobrio, 1983).

**Chronic Pain:** Chronic coccydynia develops gradually, often because of prolonged poor posture, sedentary habits, or biomechanical issues that continuously strain the coccygeal region. This persistent discomfort can extend over months or even years, particularly if left untreated. Chronic coccydynia is typically less intense than acute pain but is marked by a dull, aching sensation that worsens with prolonged sitting, especially on hard surfaces. Patients with chronic coccydynia often report that leaning back while seated or attempting to stand after sitting for extended periods exacerbates the pain (Maigne et al., 2000).

The classic hallmark of coccydynia is localized pain directly over the coccyx, often described as "tailbone pain." This pain tends to intensify with specific actions or prolonged postures. For instance, patients often find that prolonged sitting, especially on hard surfaces, exacerbates the pain. The discomfort may also be triggered by activities like leaning back while seated, standing for extended durations, or rising from a seated position (Foye, 2011). In some cases, the pain can extend to functional activities such as sexual intercourse or defecation, due to the anatomical proximity of the coccyx to pelvic floor muscles and ligaments (Lirette et al., 2014). These aggravating factors significantly impact quality of life, limiting physical activities and making daily tasks challenging for affected individuals.

Impact on Daily Life: The pain associated with coccydynia can also contribute to psychosocial distress, affect work productivity, physical mobility, and emotional well-being. Patients with chronic tailbone pain may develop anxiety and depression, further complicating their condition (Patijn et al., 2007).

## MANAGEMENT STRATEGIES FOR COCCYDYNIA

The treatment of coccydynia often requires a multidisciplinary approach combining pain management, lifestyle changes, and targeted physical therapy. A variety of strategies are recommended to alleviate symptoms and improve quality of life.

**ACTIVITY MODIFICATION:** A primary intervention in managing coccydynia is to limit or adjust activities that may aggravate tailbone pain. For example, prolonged sitting, particularly on hard surfaces, can increase pressure on the coccyx and worsen symptoms. Activities such as cycling or exercises that involve repetitive motion or impact to the coccyx region should be avoided, as they can intensify pain. Patients are advised to take frequent breaks when sitting and to adjust their seating position to reduce pressure on the coccyx (Maigne et al., 2000).

**SEATING ADJUSTMENTS:** Specialized cushions, such as doughnut-shaped or wedge cushions, can provide significant relief by redistributing pressure away from the coccyx. These cushions are designed to reduce contact between the coccyx and the sitting surface, allowing for a more comfortable seated posture. Studies indicate that using supportive cushions can reduce pain in individuals with chronic coccydynia by minimizing direct coccygeal pressure (Wray et al., 2001).

**POSTURE CORRECTION:** Maintaining proper posture is essential in alleviating strain on the coccyx. Poor sitting or standing posture can lead to increased pressure on the tailbone and surrounding structures, worsening symptoms over time. For example, sitting with a slight forward lean and using lumbar support can help distribute weight more evenly across the pelvis and decrease coccygeal load. Physical therapists often emphasize posture training as part of a comprehensive treatment plan to promote long-term pain relief (Foye, 2011).

**HEAT AND ICE THERAPY:** Applying heat or ice to the coccyx area is a commonly recommended method for managing pain and inflammation. Ice packs can be effective in reducing acute inflammation following injury, while heat therapy helps to relax surrounding muscles, enhancing blood flow, and reducing discomfort. Alternating heat and ice have been shown to be effective in some patients with musculoskeletal pain, including those with coccydynia, due to its combined anti-inflammatory and muscle-relaxant effects (Woon et al., 2013).

**STRENGTHENING EXERCISES:**
Targeted strengthening exercises, particularly for the gluteus maximus and surrounding muscles, can help stabilize the pelvis and provide support to the coccyx. Strengthening the gluteus maximus is beneficial as this muscle plays a role in maintaining posture and supporting the lower back and pelvic structures. Core strengthening exercises, including gentle lower back, hip, and abdominal exercises, are also beneficial for improving overall stability. Physical therapy programs focusing on these muscles have demonstrated improvements in pain and functionality in individuals with chronic coccydynia (Kim et al., 2015).

**PELVIC FLOOR MYOFASCIAL PAIN IN COCCYDYNIA**
Research indicates that one contributing factor to coccydynia is pelvic floor myofascial pain, often associated with overactive pelvic floor muscles, leading to increased muscle tension and spasms. This tension can place additional stress on the coccyx, intensifying pain in the region (Anderson et al., 2015). Overactivity in the pelvic floor muscles can result from various factors, including chronic stress, prolonged sitting, or previous trauma to the pelvic area. Addressing these muscular imbalances is essential in the comprehensive management of coccydynia, as they are commonly implicated in persistent coccygeal pain (Weiss, 2001).

**PELVIC FLOOR PHYSICAL THERAPY AND RELAXATION TECHNIQUES**
Pelvic floor physical therapy that focuses on "down-training" or relaxation techniques has shown to be a safe and effective method in managing coccydynia, particularly when it is associated with muscle tension in the pelvic floor. Down-training involves learning to relax and release the pelvic floor muscles, allowing for the reduction of stress on the coccyx and alleviating associated pain. Physical therapists often incorporate biofeedback and relaxation exercises to help patients gain better control over their pelvic floor muscles and decrease excessive tension. Studies suggest that these targeted physical therapy techniques can significantly reduce pain and improve function in patients with coccydynia and pelvic floor dysfunction (Fitzgerald et al., 2009).

**THE ROLE OF REVERSE KEGEL EXERCISES IN PAIN MANAGEMENT**
For individuals with long-standing coccygeal pain or persistent pain after procedures like coccygectomy, Reverse Kegel exercises, also known as pelvic floor relaxation exercises, play an important role in pain management. Reverse Kegels focus on intentionally relaxing the pelvic floor muscles rather than contracting them, as in traditional Kegel exercises. By practicing Reverse Kegels, patients with overactive or tight pelvic floor muscles can reduce tension in the pelvic region, thus decreasing the pressure exerted on the coccyx and alleviating pain (Baker & Sanford, 2020).

**UNDERSTANDING AND PRACTICING REVERSE KEGELS**
Reverse Kegels involve the gentle relaxation or "dropping" of the pelvic floor muscles, creating a sensation like the release felt during urination or a bowel movement. This exercise requires mindful breathing and a conscious effort to let go of any pelvic floor muscle tension, encouraging the muscles to

lower and relax. Regular practice of Reverse Kegels promotes muscle balance, helping to alleviate tension-related pain in the coccyx and surrounding areas (Rosenbaum, 2005).

## POSITIONING FOR REVERSE KEGELS

The effectiveness of Reverse Kegel exercises can be enhanced by adopting supportive positions. Recommended positions include lying on the back with knees bent and supported by one to three pillows or a chair, or sitting on a chair or exercise ball with feet grounded on the floor. These positions reduce strain on the lower back and pelvis, enabling greater focus on pelvic floor relaxation. Maintaining a supportive position can make the exercise more comfortable and facilitate the "down-training" process, allowing patients to gain better control over pelvic floor relaxation (Stanford & Nelson, 2014).

## VISUALIZING PELVIC FLOOR RELAXATION

As you begin this relaxation exercise, focus on your breathing. Inhale deeply, allowing your abdomen to expand fully. As you breathe in, visualize your pelvic floor muscles gently lowering or lengthening, creating a sense of release. This sensation is akin to the natural urge you experience during urination or bowel movements, but without any straining or tension. The goal is to foster an environment of relaxation, enabling the pelvic floor to release any tightness or discomfort (Baker & Sanford, 2020).

With each inhalation, imagine the pelvic floor muscles expanding and relaxing. Envision the tension dissipating, leading to a feeling of lightness in your pelvic area. As you reach a state of relaxation, take it a step further by using the following mental cues:

1. **Imagining Separation:** Picture your tailbone and pubic bone, or your sit bones, moving away from each other. As this separation occurs, imagine the pelvic floor muscles elongating and creating additional space within the pelvic cavity. This visualization can help reinforce the concept of muscle relaxation and promote better pelvic floor function (Rosenbaum, 2005).
2. **Elevator Analogy:** Visualize your pelvic floor as an elevator. When you contract the muscles, picture the elevator rising to the top floor. Then, consciously allow the elevator to descend gently back to the main floor. Avoid pushing down excessively, as if the elevator is descending to a basement level. This analogy emphasizes controlled relaxation, encouraging a gradual release of tension (Anderson et al., 2015).

## IMPORTANT CONSIDERATIONS

1. **Postural Stability:** Throughout this exercise, maintain a stable pelvis and spine. Avoid any unnecessary movement; the focus should remain on isolating and relaxing the pelvic floor muscles. This exercise requires concentration and patience, as it may take time to develop the awareness needed to feel the relaxation of these muscles effectively (Fitzgerald et al., 2009).
2. **Comprehensive Relaxation:** Concentrate on fully relaxing not only the pelvic floor but also the surrounding muscles in your pelvis, buttocks, and inner thighs. It's essential to ensure that you are not retaining any unnecessary tension in these areas. The release of tension in the pelvic floor is most effective when complemented by relaxation in the adjacent muscle groups (Stanford & Nelson, 2014).

Incorporating Reverse Kegel exercises into your routine can serve as a valuable tool in managing coccydynia. When combined with other therapeutic approaches aimed at improving pelvic floor health, such as physical therapy and relaxation techniques, Reverse Kegels can significantly reduce pain and enhance overall well-being (Weiss, 2001).

## CONCLUSION

Coccydynia, though often overlooked, presents a significant challenge due to its multifactorial etiology and the profound impact it can have on a patient's quality of life. This condition requires a comprehensive and multidisciplinary approach to management, combining conservative treatments with innovative therapeutic techniques.

Recent advancements highlight the importance of individualized treatment plans that address both the physical and psychological aspects of pain. Activity modification and ergonomic adjustments, such as the use of specialized seating cushions and maintaining proper posture, are fundamental in alleviating coccygeal pressure and reducing pain during daily activities (Baker & Sanford, 2020).

Pelvic floor physical therapy, particularly techniques focusing on muscle relaxation and down-training, has emerged as a pivotal component in the management of coccydynia. Exercises such as Reverse Kegels have shown promise in reducing pelvic floor muscle tension, thereby alleviating coccygeal pain (Rosenbaum, 2005; Stanford & Nelson, 2014). These exercises promote muscle balance and can be performed in various supportive positions to enhance their effectiveness.

Furthermore, incorporating multimodal pain management strategies, including heat/ice therapy and targeted muscle strengthening, supports a holistic approach to treatment. Strengthening exercises for the gluteus maximus and other stabilizing muscles play a critical role in improving pelvic stability and function, which is essential for long-term pain relief (Fitzgerald et al., 2009).

Despite these advancements, there remains a need for further research to refine treatment protocols and improve patient outcomes. Future studies should explore the long-term efficacy of these therapeutic interventions and the integration of psychological support to address the emotional and mental health aspects of chronic pain (Weiss, 2001).

In conclusion, the effective management of coccydynia requires a patient-centered and multidisciplinary approach that combines ergonomic adjustments, pelvic floor physical therapy, and comprehensive pain management strategies. By adopting these evidence-based practices, healthcare providers can significantly enhance the quality of life for individuals suffering from this challenging condition.

### *Declaration by Authors*

**Ethical Approval:** Not Applicable

**Acknowledgement:** None

**Source of Funding:** Nil

**Conflict of Interest:** The authors declare no conflict of interest.

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How to cite this article: Jyotiranjan Sahoo, Amitav Nayak, Dwarikanath Rout, Priyabrata Dash, Nihar Ranjan Mohanty. Reverse Kegels unveiled: a modern solution for coccydynia. *Int J Health Sci Res.* 2024; 14(11):374-382. DOI: *https://doi.org/10.52403/ijhsr.20241143*

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