

# REHABILITATIVE PRINCIPLES IN THE MANAGEMENT OF HIP PAIN IN MIXED MARTIAL ARTIST PATIENT: A CASE REPORT

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## ABSTRACT

**Objective:** To demonstrate the relationship between nonspecific hip pain seen in a mixed martial arts practitioner and his response to rehabilitative chiropractic management administered with a functional focus.

**Clinical Features:** A 26-year-old male had a 6-month history of right hip and knee pain and associated “burning pelvic pain” following mixed martial arts competition.

**Intervention and Outcomes:** The Lower Extremity Functional Scale (100%), Numeric Pain Rating Scale (4/10), Health Risk Profile Questionnaire, and test-retest exercise assessments were used as outcome measures. At the first return encounter, the patient reported no substantial changes to the area of chief complaint. Subsequent sport-specific functional exercises were administered to the patient, resulting in a reduction in numeric pain rating scale value to 1-2/10. The patient then reported reductions in physical limitation and lower extremity dysfunction and later returned to competitive training free from pain.

**Conclusion:** The patient responded positively to the administered chiropractic therapies and functional protocols. After the prescribed course of care, the patient reported palliative benefits, reductions of pain and dysfunction with improved pelvic and lower extremity function to return to competitive Jiu Jitsu training. (*J Contemporary Chiropr* 2021;4:12-16)

**Key Indexing Terms:** Spine; Lumbar Vertebrae; Chiropractic; Rehabilitation; Exercise Therapy; Functional Therapy

## INTRODUCTION

Hip pain is a common contributor to dysfunction and irritation. In the athletic community, the prevalence at which hip pain occurs can range from 30- 40 percent, with a demonstrative prevalence among the average adult of 12 to 15 percent. (1) Athletes and the correlative motions associated with their sport-specific movement

illustrate the hip’s use in basic sport functions such as running, jumping, kicking, and swimming; however, the hip may regularly be overlooked in fundamental aspects of mixed martial arts (MMA) training. In this regard, manifesting hip pain is something that is often non-specific. In a general sense, neuromusculoskeletal conditions can be demonstrated through 5 general pain generators: muscular or ligamentous, articular, nervous, bursal, or infectious/systemic.

Differentiating between presenting characteristics is crucial to understanding the underlying pathology. In assessing MMA mechanisms, the differentiation between presenting pain generators may prove to be more troublesome. Therefore, the presenting pain may be of a more functional or nonspecific variety; this can be evident through the functional aspects of MMA such as guarding, lunging, shooting, and striking. When such unique motions are evident in the activities of MMA, then it may provide a greater rationale for functional assessment and treatment protocol.

The world of mixed martial arts is an ever-expanding enterprise in both participants and the spectator population. The risk for critical injury within combat sports is relatively low on average. Information provided within a 5-year study from 2002-2007 illustrated that per every 100 participants within MMA activity, approximately 23.6 individuals reported related injuries; equating to 23.6% of the individuals analyzed within the study. (2) In another study conducted from 2008-2015, analysis of MMA participants found that 39,181 injuries were reported to U.S. emergency departments with sprains/strains, most common amongst Brazilian Jiu Jitsu (BJJ) and Judo practitioners. Lower extremity injuries being most common via Judo practitioners, and the majority of injuries stemming from practice or non-competitive grappling. (3) Providing treatment parameters regarding the sport of MMA is still within its relative infancy, and more information is required to quantitatively and qualitatively evaluate the aspects of injury and functionality within MMA participation and competition.

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The activities and movements brought on by MMA competition and training can be unique and specific to the sport itself, demonstrating movement patterns that stress the associated anatomical structures of the regions involved. For example, the nature of BJJ being conducted largely with an athlete on his or her back or portions of Judo that stress clinching throws to the mat offer a specific functional variety that may only offer reproduction of pain within a non-specific functional stressor. Compiling all of the specifics of the MMA world, in terms of training, functionality, and injury, available literature has been sparse in addressing any correlations between conservative management and hip pain as it pertains to MMA athletes specifically. This case report discusses a BJJ practitioner with associated hip pain and the functional management administered as conservative therapy.

## Case Report

### History

A 26-year-old male competitive Brazilian Jujitsu athlete hurt his right hip and knee during a match and was initially evaluated and treated by a physical therapist. He received physiotherapeutic interventions and exercise prescriptions which provided “some” relief to the bulk of presenting complaint, resolving the consistently presenting pain.

Three months later he started acupuncture for ongoing care to his hip as well as knee complaint, stating he “feeling better but not 100%.” The needling continued to improve his symptoms.

Three months later, he came to us with a now 6-month history of “burning pelvic pain.” Due to his full-time fighting schedule the pain occurred frequently (51-75% of the time). Using a 10-point numeric pain rating scale (NPRS), with 0 being no pain at all and 10 being the worst pain imaginable, he reported 4/10 pain that only occurred when “rolling” and practicing jujitsu. Clinical outcome assessments included the Lower Extremity Functional Scale (LEFS) and Health Risk Profile Questionnaire. His LEFS score was 100% and health risk was low for biopsychosocial management. He had experienced no drop attacks, change in bowel or bladder, changes in sexual function, saddle anesthesia, night pain, fever, or chills.

At initial presentation, musculoskeletal diagnosis with exacerbated/unresolved strain of the right psoas, adductor muscle group, and abdominal muscle group causing referred pain to the right inguinal crease. Competing differentials included (1) athletic pubalgia; (2) hip joint osteoarthritis; (3) visceral (rectal, testicular, appendix) referred pain; (4) joint capsulitis (femoracetabular, sacroiliac, lumbar facet); and (5) hernia.

### Physical Examination

He had no noticeable antalgic posture or gait compensations. No gross abnormalities were noted upon inspection of his abdomen. Bowel auscultation revealed 20 bowel sounds per minutes. Percussion revealed symmetrical tympanic in all 4 quadrants. Light and deep palpation did not reveal any abnormal mass, rigidity, or tenderness. The patient’s gall bladder, spleen, and kidneys were non-palpable. Examination of other organ systems as well as neurologic exam was normal.

During orthopedic evaluation lumbar active, passive, and resisted motion was assessed in 6 planes for involvement (O’Donoghue’s maneuver), without notable provocation. Laslett sacroiliac test series was negative for sacroiliac joint involvement. FABER, FADIR, and Eli test were all negative for femoracetabular joint assessment. While negative for muscular shortening, Modified Thomas test did produce vague but similar complaint symptoms to right anterior hip region. Hip scour motion (hip quadrant test) exhibited crepitus bilaterally and a painful arc on the right. O’Donoghue’s for the right hip demonstrated painful flexion, internal rotation, and adduction; worse with resistance confirming mild muscle strain.

Relevant muscular palpation findings on the right-side included tenderness of his quadratus lumborum, iliopsoas insertion, and pectineus. Other abdominal, low back, hip adductor, and pelvic muscles did not contribute to pain with palpation or isolated muscle testing. Motion palpation identified bilateral limitations in rotational movements from T4 through T7 and L2 through L4.

### Management

The working diagnosis of mild right-sided adductor strain and iliopsoas syndrome with associated segmental dysfunction of lumbar spine thought to be secondary to guarding of lower and related trunk muscles.

The treatment plan included 2 sessions per week for 2 weeks (4 visits). Office care included high-velocity, low-amplitude adjustments to palpated restrictions in the lumbar spine. Soft tissues mobilizations were performed on associated structures, specifically the psoas, iliacus, and pectineus on the right. Each session included audit of exercises to document progressions and the role of exercises in maintaining benefits of each visit.

Initial home care focused on stretching maneuvers and advice to avoid provocative movements, limiting training intensity.

### Outcome

At his first follow-up visit there was no appreciable reduction in pain, maintaining 4/10 on NPRS. While he made favorable comments, there was no real change in



**Figure 1.** Bear Exercise. Variant shown utilizing banded variable resistance.



**Figure 2.** Cossack Squat. Weighted with medicine ball.

his outcomes. Functional limitations were revisited and a mechanical sensitivity was determined while he was supine in his guard position, trying to extend the hips coupled with rotation (“throwing”). Based on this audit, weighted “deep hip-type” exercises were incorporated into the session: bear crawls with resistance bands, Cossack squats, and V-up's on a physioball (Figures 1-3). Following these exercises, he reported 50% resolution and decreased frequency of chief complaint. He was prescribed these exercises as home care, 3 sets of 10 repetitions for each exercise, once a day.

At the second return visit he reported sustained decrease in pain intensity of 1-2/10 on the NPRS. He further noted that pain is not reproducible during drills and instruction but only reproducible during contests. Due to the level of clinical improvement, reassessment was performed.



**Figure 3.** Advanced progression to incorporate a stability ball.

In order to continue improvements he progressed to a more sport-specific advanced functional sling movement pattern. First, a banded gluteal bridge variant was attempted (Figure 4). While response to this progression positive, we aimed at improved real-time outcomes. The activity was further progressed to bridges with right hip rotation, while isometrically squeezing a physioball with his heels on a chair (Figure 5) After reassessing the pain with a sport-specific movement the patient reported feeling “looser in the hips” and to not have any pain. Challenging his guard throwing position confirmed durable benefit of pain relief (Figure 6).

One-month follow-up phone call after discharge, he remained asymptomatic and was able to fully return to competition training schedule. His reported commitment to prescribed active care continue to be of benefit. The patient provided consent for his health information to be published.

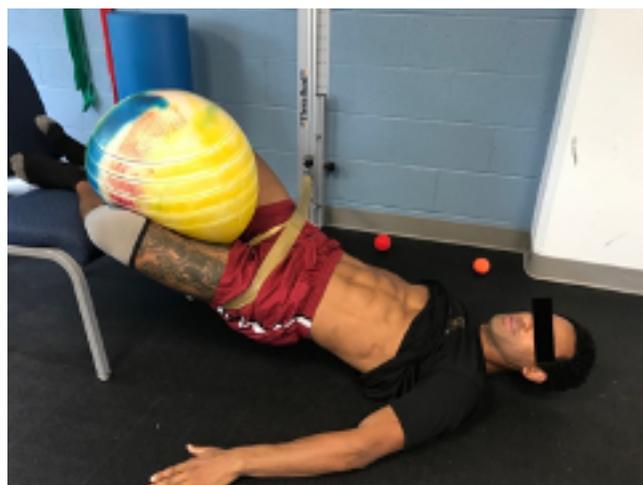
## DISCUSSION

We found little research on functional rehabilitation training describing the chiropractic management of injuries specific to the sports of BJJ or MMA training. Musculoskeletal injuries are common in the sports world, with the complex and intricate positions of grappling stress applied to the joints of the body that are not traditional to that of other sports, so traditional rehabilitation protocols may not be effective.

In the case presented, alternative management of physical therapy and acupuncture for the patient's hip/knee pain was minimally effective. These methods provided some relief of the patient's pain, however with the more complex, sport-specific positions, the pain was still present. Advancement in the rehabilitation protocol to simulate the patients diverse grappling positions that



**Figure 4.** Glute Bridge Progression. The one-legged variant shown utilizes resistance band to increase challenge for lateral stability.



**Figure 5.** Glute Bridge Progression II. Variant shown utilized chair and stability ball to imitate close-guard position often encountered by MMA fighters.

forced his joints into end range stress was deemed most valuable in progressing his treatment.

The patient came for chiropractic management of his chronic hip/knee pain with a NPRS score of a 4/10, LEFS score of 100% and health risk low for biopsychosocial management. Typical chiropractic treatment of high-velocity, low-amplitude adjustments and soft tissue mobilizations to associated musculature structures and progressing rehabilitation of “sport-specific” exercises over 2 weeks ( 4 visits) provided a drop in NPRS score from a 4/10 to a 1-2/10, with no reproduction of pain or discomfort from drills at practice.

Aspects of the management plan regarding our patient initially began with use of chiropractic manipulative therapy (CMT). The inclusion of the lumbar CMT



**Figure 6.** Closed-Guard position. Test and retest position of patient’s mechanical sensitivity to “throwing” from a guard position.

protocols were equated to literature explaining the beneficial nature regarding the associated anatomical and physiologic structures. These benefits, as it pertains to this case, can be demonstrated through reductions in muscle inhibition to the lower extremity musculature and increases in muscle strength and corticospinal activity in previously analyzed MMA groups. (4,5) The correlations described in these studies were incorporated to provide harmony between the neurologic components and the anatomical structures they innervate for the overall performance benefits administered for the patient.

On the first visit, the patient was asked to perform a movement that proved to be the most provocative to his current symptoms, and then rehabilitation exercises were selected and provided to optimize the reduction of pain. The exercises were asked to be performed in the office to ensure proper form, then patients were asked to continue exercises at home.

On return visit, the patient stated a reduction in pain which could no longer be replicated during grappling drills during BJJ training. At this point a reassessment was performed and advancement of rehabilitation exercises were given to continue progress. Treatment ended after two weeks and patients were encouraged to continue at home care to help discourage a return of symptoms. One month post last visit, we called him to assess his current progress. The patient stated that at home exercise still provided benefit and he still continued to have no pain with training.

Ultimately, the outcomes demonstrated by this patient were largely attributed to functional, sport-specific rehabilitative protocols. Through the functional nature of the exercises given to the patient, he was able to return to BJJ participation with limitations in lower extremity dysfunction and notable reductions in pain. While

research is not suggestive of performance enhancement through chiropractic management,<sup>6</sup> it has demonstrated correlations with reductions in injuries and reductions in missing performance dates due to injury-related inactivity. (7) Building the functional framework through the prescribed rehabilitative exercises were exhibited to have the highest beneficial quality for this patient; demonstrating the foundational attributes through MMA movements, thus creating the reductions in pain and decreases in the sport-specific dysfunctions. (8)

This clinical improvement in the patient's pain and discomfort is worth noting. Functional rehabilitation more specific to a patient's needs in their respective life or sports demands is worth more research to help provide benefit to patients who are in a less traditional setting.

#### Limitations

The described benefits to care by this patient cannot be generalized to other patients. The characteristics and aspects of this case are not largely represented by the any presenting injuries or complaints by combat sports practitioners. Simultaneously, the outcome assessment tools utilized within this case (LEFS, and NPRS) have been demonstrated throughout the literature as lacking specificity of association. Additionally, further specific studies are required to better understand the relationships between chiropractic therapies, functional training, and MMA-related injuries.

## CONCLUSION

This case report presented approaches to the clinical diagnosis of right-sided adductor strain and iliopsoas syndrome. After a series of regional chiropractic adjustments and functional rehabilitative exercises were administered, this patient was reported having reductions in pain, decreased pelvic and lower extremity dysfunction, and improved lower extremity function when returning to competitive mixed martial arts.

#### Funding Sources and Conflicts of Interest

No funding sources or conflicts of interest were reported for this study.

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