

# CHAPTER ONE

## 1.1 Introduction

At least 80 percent of the population suffers from low back pain at some time during their lives (Manga et al., 1993: 221). At the time of any given survey it is estimated that the number of people actually suffering from low back pain ranges from 5 to 30 percent (Manga et al., 1993: 221). The differential diagnosis of back and leg pain should include sacroiliac joint disease (Hendler et al., 1995: 169). According to Schwarzer et al. (1995: 36) the prevalence of sacroiliac joint pain appears to range from 13%-30%, thus making the sacroiliac joint a significant source of pain in patients with chronic low back pain.

Sacroiliac syndrome is well-defined and usually presents with pain over the sacroiliac joint in the region of the posterior superior iliac spine, with possible referral to the buttock, groin, and leg (Kirkaldy-Willis et al., 1992: 123). Hendler et al. (1995:171) state that the ligaments become taut, and the reflex muscle spasm and pain is intense, severe, and continuous. Harrison et al. (1997: 614) found that most patients with sacroiliac syndrome seem to present with spastic or hyperactive muscles which leads to increased pain and inflammation. Because of the close proximity of the Piriformis muscle to the sacroiliac joint (Moore and Dalley, 1999: 551), the Piriformis muscle is very likely to be in a hypertonic state in sacroiliac syndrome.

In a study by Cibulka et al. (1998: 1009-1015), results showed a correlation between sacroiliac joint dysfunction and unilateral hip rotation asymmetry. In a study by Bisset (2003), results indicated that a sacroiliac manipulation has an effect on hip rotation on the side of sacroiliac syndrome, with a statistically significant increase in hip active and passive internal rotation. However, he recommended that further studies in this regard should contain a placebo group and more manipulations should be administered and the effects on hip rotation noted.

The muscles responsible for movements of the hip (Moore and Dalley, 1999: 533, 534, 540, 551, 563, 613) have an overlapping innervation with the hip joint (L2 to S1) (Palastanga et al., 1989: 440) and sacroiliac joint (L2 to S3) (Bernard and Cassidy, 1991: 2112 and Ombregt et al., 1999: 691).

In addition to the above, facilitation of the neuronal pool at the level of the involved hypertonic muscle associated with sacroiliac syndrome (Korr, 1975 as cited in Leach, 1994: 98), proprioceptors could be facilitated erratically thus decreasing hip joint proprioception. However, Bernard and Cassidy (1991: 2126) hypothesize that manipulation forcefully stretches hypertonic muscles against their muscle spindles, thus leading the researcher to hypothesize that, with sacroiliac manipulation, proprioceptors could be stimulated thus resetting hip joint proprioception.

In light of the above, the aim of this clinical investigation was to determine the effect of sacroiliac joint manipulation on hip functional ability<sup>1</sup> in patients with sacroiliac syndrome, thus facilitating in providing information with regards to treatment and rehabilitation of the hip.

## **1.2 Aims and Objectives**

The aim of this clinical evaluation was to determine the effect of sacroiliac joint manipulation on hip joint functional ability in patients with sacroiliac syndrome by means of subjective and objective clinical findings.

- The first objective was to determine the effect of sacroiliac joint manipulation on sacroiliac syndrome in terms of the subjective clinical findings.

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<sup>1</sup> Hip functional ability was defined in this study as an assessment of Piriformis muscle pressure threshold, active hip joint range of motion, and hip proprioception. Limitations in terms of data collected was as a result of the fact that patients could not participate in this study if they had a hip pathology, therefore excluding them from being able to supply subjective data.

The first hypothesis was that sacroiliac joint manipulation would improve sacroiliac syndrome indicated by favourable subjective clinical findings.

- The second objective was to determine the effect of sacroiliac joint manipulation on hip joint functional ability in terms of the objective clinical findings.

The second hypothesis was that sacroiliac joint manipulation would improve hip joint functional ability indicated by favourable objective clinical findings.

- The third objective was to compare the subjective and objective clinical findings of the group receiving manipulation to the sacroiliac joint versus the control group before and after the crossover.

The third hypothesis was that the group receiving manipulation to the sacroiliac joint would compare favourably to the control group indicated by an improvement in subjective and objective clinical findings. It was hypothesized that the subjective and objective clinical findings of the control group would either stay the same or get worse.

### **1.3 Limitations**

- This study aimed to address clinical improvement only and not explain the mechanisms responsible. However, suggestions regarding the possible mechanisms are given to allow for further research.
- It is acknowledged that there was both acute and chronic sacroiliac syndrome in this research as patients were only excluded by inclusion and exclusion criteria, which dictated that the patient needed to present with a given severity of pain as indicated on the numerical pain rating scale. However, note was taken in terms of the demographic data as to how long the patient had had the lower back pain.

## 1.4 Rationale for the Study

- Harrison et al. (1997:614) found that most patients with sacroiliac syndrome seem to present with spastic or hyperactive muscles. It was assumed that with hypertonicity of a muscle the pressure threshold of that muscle will decrease. Because of the close proximity of the Piriformis muscle to the sacroiliac joint, the pressure threshold of the Piriformis muscle was assessed as the sacroiliac syndrome was treated with sacroiliac joint manipulation. This outcome will broaden our knowledge of sacroiliac syndrome and its associated presentation.
- The effect of sacroiliac joint manipulation on hip rotation ranges of motion has been investigated (Bisset, 2003), however, the study did not include all hip ranges of motion, only one manipulative treatment was administered, and there was no control group. Therefore, to exclude experimental bias and lend further support to the study, a similar study including assessment of all hip ranges of motion, frequent manipulative treatments, and a control group needed to be conducted.
- It was assumed that hip joint functional ability will increase with sacroiliac joint manipulation (Bisset, 2003). The results of this study will prove or disprove this assumption, thus providing valuable evidence for the use of sacroiliac joint manipulation in the prevention of hip joint pathologies occurring due to erroneous muscle contraction, decreased hip joint range of motion and/or decreased hip joint proprioception.