Chiropractic treatment: A Case Report

BRETT S. JAROSZ and W. BRUCE ELLIS

ABSTRACT: **Objective:** To describe the enhanced sporting performance of an elite masters’ racewalker following chiropractic care. **Clinical Features:** A 50-year-old male elite racewalker preparing for the World Masters Athletic Championships presented for chiropractic care. **Intervention and Outcome:** Treatment involved chiropractic spinal manipulative therapy (SMT) and tibiofemoral adjustments. Four days post treatment the patient recorded a two-and-half-minute improvement on his previous personal best (PB) 15km racewalking time. His previous 15km PB was the current state record (set one year earlier) and his 10km PB was the national record (set six years earlier). He was seen twice in the month prior the World Masters event (one visit per fortnight) where the above treatment was administered. The patient returned from the championships with two medals and two further PB performances over the 5km and 10km distances. **Conclusion:** There has been minimal research published regarding the enhanced sporting performance of athletes receiving chiropractic care. From this case report and the evidence presented, it appears that chiropractic intervention can play a role in optimizing athletic performance. This should be further investigated in randomized controlled and clinical trials.

INDEX TERMS: (MeSH): CHIROPRACTIC; MANIPULATION, CHIROPRACTIC; SPORTS; (Other): ATHLETIC PERFORMANCE.

INTRODUCTION

Sport within Australia continues to grow in popularity and professionalism. This growth, at both the amateur and professional levels, has produced a corresponding interest among athletes in chiropractic treatment. As a result, numerous chiropractic practitioners and academics have begun evaluating, studying and publishing research in the field of sports chiropractic.

Although there is a growing body of evidence reporting the positive effects of chiropractic management on sports-specific diagnoses and sports-related injuries, there has been minimal information published regarding chiropractic’s effect on overall athletic performance.

Lauro and Mouch found that athletes who trained and received a 12-week program of chiropractic care had a significant increase in their reaction time when compared with athletes who trained but did not receive chiropractic care. Schwartzbauer et al showed significant improvement in muscle strength, long jump distance and microcirculation (capillary counts) in baseball players after a specific duration of upper cervical chiropractic care. Shrier et al found that athletes involved in sprint sports tended to perform better in both vertical jump height and flying 40 meter sprint time after high-velocity, low-amplitude manipulation (HVLA). Sandell et al demonstrated that chiropractic treatment can improve hip extension ability, but the possible effect of chiropractic treatment to enhance running velocity, by increasing hip extensibility and thereby increasing the running step, remained unproven. Costa et al concluded that chiropractic spinal manipulative therapy (SMT) in association with muscle stretching seems to be associated with an improvement of golf players’ full-swing performance when compared with muscle stretching alone.

The purpose of this case report is to contribute to the body of empirical evidence by describing the enhanced sporting performance of an elite masters’ racewalker following chiropractic care.

CASE REPORT

The patient was a 50-year-old male elite racewalker preparing for the World Masters Athletic Championships. For many years, he utilized various health care professionals (chiropractors, physiotherapists, sports medicine practitioners, remedial therapists) in an attempt to optimize his athletic performance and prevent and/or recover from injury. Previous treatment consisted of: (1) chiropractic HVLA SMT to the cervical, thoracic and lumbar regions, (2) mobilization of the lower extremity articulations and (3) soft tissue therapies to the gastrocnemius/soleus complex, psoas, gluteal, erector spinae, quadriceps femoris and hamstring musculature. He reported that this method of management provided him with the “freedom” (mobility and function) he required to continue training and performing at his elite level.

In the month prior to the World Masters Athletic Championships, the patient presented to the clinic complaining of generalized lower extremity pain and low back stiffness.

Conflict in Interest Notice: There were no funding sources for this study and no conflict of interest has been identified.

Received: 17 May 2010, accepted 28 June 2010
Effect on Sports Performance
JAROSCZ• ELLIS

He reported that his routine yearly training program had concluded, and he was now “trying to maintain his fitness in preparation for the competition.”

On physical examination, the right pelvis was higher compared to the left in standing posture. There was weakness of the bilateral psoas and quadriceps muscles on resisted muscle testing, graded 4/5. Prominent motion restriction of both tibiofemoral articulations, the thoracolumbar spine and right sacro-iliac joint (SIJ) were noted during dynamic (motion) palpation. Other physical examination findings and testing procedures including neurological and orthopaedic examinations were unremarkable.

Treatment involved HVLA SMT to the right SIJ and thoracolumbar spine, and the application of a wrist extension technique to a posterior tibia subluxation bilaterally. Post treatment, muscle strength of the psoas and quadriceps was graded 5/5 bilaterally.

The patient completed a 15km racewalking time trial four days after the treatment. He recorded a two-and-half-minute improvement on his previous personal best (PB) time. He detailed the significance of this improvement - his previous 15km PB was the current state record (set one year earlier) and his 10km PB was the national record (set six years earlier). He was seen twice in the month prior to the World Masters event (one visit per fortnight) where the above treatment was administered. The patient returned from the championships with two medals and two further PB performances over the 5km and 10km distances.

DISCUSSION

There has been minimal documentation regarding the effect of chiropractic treatment on enhanced sporting performance, despite the significant increase in the demand and support for chiropractic care by athletes.3-5 A recent review of the literature revealed five studies that investigated the effect of chiropractic treatment on various components of athletic performance.22-26 The literature suggests that athletic performance can be enhanced by chiropractic intervention. However, only two of these studies demonstrated significant improvements.22,23

This case report demonstrated the enhanced sporting performance of an elite masters’ racewalker following chiropractic treatment. Research has demonstrated that the endurance performance of masters’ athletes decreases with age.30-34 According to the literature, peak physiological function for men occurs just before age 30 and then regresses between 0.75 per cent and 1 percent per year.35 Aerobic power (VO2max) has been shown to decrease by 22 per cent between the ages of 40 and 70.36 This is supported by Rittweger et al30 who demonstrated metabolic power decreases by 26 per cent in masters’ endurance athletes between the ages of 40 and 90. However, this case revealed a significant improvement in PB endurance performances, where the prior PB times were achieved up to six years earlier.

For many years the patient had been managed with the same treatment modalities applied to the same body regions (chiropractic HVLA SMT, generalized lumbopelvic-hip and lower extremity soft tissue therapies, lower extremity mobilisations). It is the opinion of the authors that the positive response seen in this case was related to addressing the biomechanics of the tibiofemoral articulations. Importantly, it should be noted that the physical examination findings of prominent tibiofemoral motion restriction and the treatment thereof, were reported by the patient to be the first time this alteration in biomechanics had been observed and/or treated.

Biomechanical analysis of racewalking gait demonstrates significantly increased maximal knee extension and external peak knee hyperextension moment than did running or walking.37 During racewalking, participants spend 44 to 51 percent of stance with the knee in hyperextension.37 Knee extension requires anterior movement of the tibia on the femur in the sagittal plane and external rotation of the tibia relative to the femur in the transverse plane.38 It could be suggested that the correction of the posterior-to-anterior tibial motion restriction in relation to the femur enhanced this patient’s racewalking biomechanics.

Furthermore, Hamill et al39 illustrated that decreased sagittal range of motion (i.e. loss of flexion) of the knee joint does not attenuate shock as well, passing an unreduced force to L5/S1, possibly contributing to or resulting in low back pain. It can be theorized that the increased maximal knee extension nature of the racewalking gait biomechanics may have resulted in this patient’s low back stiffness. Therefore, by addressing the patient’s tibiofemoral biomechanics it can also be hypothesised we increased the sagittal range of motion of the knee, improving the shock attenuating abilities of the lower kinetic chain.

Additional mechanisms could be proposed to explain the positive effect of chiropractic treatment seen in this case. These mechanisms include, but are not limited to, the effects that chiropractic adjustments have on proprioception, somatosensory processing and feed-forward muscle activation.30-42 Stump and Redwood4 state, “because professional sports are highly competitive and thus intensely pragmatic, they provide an arena in which new techniques can potentially move quickly toward widespread acceptance once their efficacy is established.” This case report contributes to the literature that suggests athletic performance can be enhanced by chiropractic intervention.22,26 It must be noted however, that the treatment protocol used in this case cannot be generalised to all athletic populations. Athletes necessitate a specific treatment protocol designed and implemented with their particular biomechanical, athletic and sporting performance requirements in mind. In this case the athlete had prominent motion restrictions of both the tibiofemoral articulations. Therefore, the emphasis of the treatment was to increase the motion of the tibia in relation to the femur.

CONCLUSION

There has been minimal research published regarding the enhanced sporting performance of athletes receiving chiropractic care. From this case report and the evidence presented, it appears that chiropractic intervention can play a role in optimizing athletic performance. This should be further investigated in randomised controlled and clinical trials. Future directions for chiropractic research should investigate both specific aspects of athletic performance and specific sports.
REFERENCES


Chiropractic Journal of Australia
Volume 40 Number 3 September 2010

Effect on Sports Performance

JAROSZ • ELLIS