

Ita. J. Sports Reh. Po.

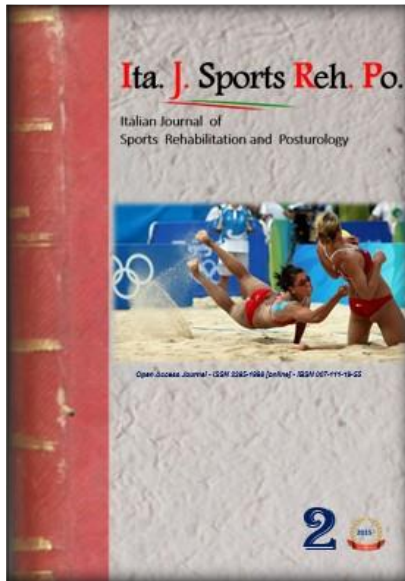
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Italian Journal of Sports Rehabilitation and Posturology journal of Sports Rehabilitation and Posturology

Dear Readers,

The idea of creating an Italian Journal of Rehabilitation and Sport Posturology in English, with an international outlook, will allow us to establish a scientific exchange with health professionals who deal with sport all over the world.

This is a very interesting aspect of our study. It will enable us to widen the sphere of our professional experiences, both the theoretical and the practical ones, and to enter into relations with different scientific circles. The written and the oral exchange of information is the source and the essence of knowledge and it allows us to have an ethical, serious, professional communication whose content is validated by the International Scientific Literature.

Our editorial purpose in Italy is to encourage studies and researches, not only in Universities, but also in sports in order to avoid the empiricism that for years has underestimated the Rehabilitative Science applied to Sport.



Rosario D'Onofrio
Editor In Chief

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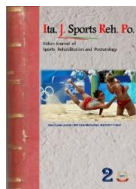
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Effect of osteopathic manipulative treatment on sport-related ankle sprain injuries: case report

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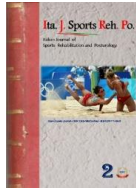
ABSTRACT

Background: After acute injury, traumatized tissues respond following the healing process characterized by the inflammation response, fibroblastic repair response and remodeling response. This paper aims at analyzing the effect potential of the osteopathic manipulative treatment (OMT) which is capable of facilitating the healing process **Method:** A 28-year-old female volleyball player diagnosed with a grade III acute ankle sprain injury, a walking plaster cast for 20 days and no weight load on her foot, requested OMT. The osteopath scheduled and administered five OMT direct, indirect techniques sessions **Results:** The patient had her first differentiated training on the 27th day after the injury and her first official competition on the 51st day **Conclusions:** The outcomes of this single case are linked to the removal of the somatic dysfunctions which seem to promote the healing process responses therefore justifying future clinical studies dealing with the OMT mode of action

Keywords: Osteopathic manipulative treatment; sports injury; somatic dysfunction; ankle sprain

Introduction

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Many recent Evidence-based Practice treatments can decrease the symptoms and disability associated with this type of injury allowing people to resume their regular sport activity, but, on the other hand, many athletes and people in general continue to waste a lot of time and suffer the economic damages caused by the trauma^{1 2}. Therefore, ankle injuries are a serious medical and socio-economic problem; the total costs of the treatment and absences from work due to ankle sprain injuries are high. Although the effectiveness of the OMT among large patient populations, in terms of treatment³ and prevention, is documented in the medical literature⁴ and recent preliminary data show the effectiveness of OMT before competitions and athletic performance⁵, there is a lack of information on any new treatment procedures that offer the potential beneficial effects of using the OMT as a cure for acute sport injuries

Baseline Case Description

The patient is a 28-year-old woman, height 175 cm, weight 65 kg, body-mass index 21,22, she plays volleyball. She arrived for observation requesting an appointment and OMT two days after being released from the hospital emergency room where she had been admitted due to a sport accident. All the information on her case came from the outpatient emergency room report, which advised the patient to see an orthopaedist. The Ankle X rays and the orthopaedic consultation were performed in the ER radiology ward and they reported: localized swelling and pain when palpating the perimalleolar site, pain during flexion and extension, functional rotation deficit, no peripheral deficit

Orthopaedic Diagnosis

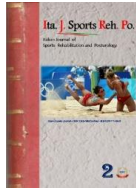
Grade III ankle sprain injury of the left talocrural ligament, a walking plaster cast was fitted for 20 days and no weight load on her foot.

Hospital Therapeutic Advice

Application of a walking plaster cast for twenty days, no weight load on her foot, use of crutches and leg elevation, pharmacological therapy for six days and cryotherapy three times a day for four days, removal of cast after twenty days

Osteopathic Assessment

Before the osteopathic assessment, the patient was given the informed consent and privacy form to sign as required by law in Italy for OMT. After the examination, the therapy was



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agreed upon which consisted of 5 OMT sessions, on a need basis. The patient was managed by the principal investigator, a professional osteopath registered with the Italian Osteopath Register, with at least 6 years of post-diploma experience in osteopathy and sport-related injury OMT

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Materials and Methods

Measures

Studying the OMT effects and describing clinical data with photographic evaluation on day 9 and day 18 after the trauma. Filling out the appropriate Pre-OMT (-1) Post 4 OMT (day 19) Post 5 OMT (day 26) questionnaire that investigated, in two separate sections, pain and disability in different daily situations such as walking at a fast pace and running. The outcome measures were investigated using the Ankle Function Index^{6,7} and photographic evaluation. Earlier on, a bi-lingual healthcare assistant translated the Index from English to Italian

Primary outcome measures:

Response time of primary injury and tissue damage related to the treatment of the somatic dysfunctions

Secondary outcome measures:

First differentiated training time related to a complete resolution of the somatic dysfunctions, information gathered during a telephone interview with the patient. The outcome measures were investigated using the Ankle Function Index^{8,9} and photographic evaluation

Notes

The day before the first OMT session, the patient reported that, because of acute pain to her calf and ankle joint during the night, she had to remove the cast, so she arrived for the first session without the cast and leg elevation using 2 elbow-crutches

Treatment Administration Protocol

Osteopathic lymphatic pump treatments (LPT), High-velocity low-amplitude thrust structural OMT technique (HVLAT), Cranial osteopathic manipulative technique (COMT)



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Treatment

Five OMT sessions were administered in the appropriate setting and each one included structural examination and specific manipulation procedures based on the comprehensive somatic diagnosis of the body areas persisting in the dysfunction, as areas subjected to

physical stress due to postural adaptation (Table 1). The protocol was organized in order to meet the subjective, objective clinical parameters and in particular:

- to improve the trauma-related pain and disability;
- to improve the linked function deficit;
- to reduce the sport activity to the minimum.

In the first three OMT sessions, based on the characteristics/properties of each specified technique, the following were used:

Osteopathic LPT

These techniques were administered during the post-trauma acute phase since they were considered effectual at managing the response of sore, inflamed tissues. The Osteopathic LPT supplies a booster dose of movement, which promotes the right fluid dynamics and is linked to a greater fluid reabsorption^{10 11 12}. These are the reasons why these techniques were deemed suited for OMT of acute, medium somatic dysfunctions present in the assessment identification sites for days 2, 9 and 12 (Table 1).

In the other two OMT sessions, the following were used:

HVLAT, COMT

These techniques were administered during the post-trauma post-acute phase since deemed suited at managing the ankle local, structural dysfunctions and adaptation to functional load. But above all, the HVLAT technique is associated with somato-visceral responses regulated by sympathetic activity¹³. Furthermore, the COMT is recommended to decrease cardiac sympathetic influence and improve parasympathetic modulation^{14 15}, this in relation to resumption of the sport activity. For these reasons, they were deemed suited for OMT of acute, medium somatic dysfunctions present in the assessment of the identification sites on day 18.

The assessment of the identification sites on day 25 showed neither acute nor mild somatic dysfunctions, the patient was able to ambulate, walk quickly and run with no functional restrictions, just the Cranial osteopathic manipulative technique was administered (Table 1). The whole session lasted 30 minutes, 10 minutes for the assessment and 20 for the treatment

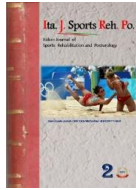


Table 1

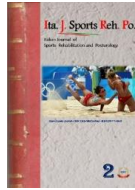
Somatic dysfunctions in a patient with III grade acute ankle injury outcomes. Identification sites for Pre-OMT somatic dysfunctions, identification sites for Post-OMT somatic dysfunctions, days of OMT administration

	Days				
	-1	Π	≠9	=12	=18 ↑25
Pre-OMT somatic dysfunction					
<u>Identification Sites</u>					
<input type="checkbox"/> Neck		x			
<input type="checkbox"/> Chest		x			
<input type="checkbox"/> Ribs		X			
<input type="checkbox"/> Lumbar		X			
<input type="checkbox"/> Pelvis		X			
<input type="checkbox"/> Lower Limbs (left)		X			

	Days				
	-1	Π	≠9	=12	=18 ↑25
Post-OMT somatic dysfunction					
<u>Identification Sites</u>					
<input type="checkbox"/> Neck		x			
<input type="checkbox"/> Chest					
<input type="checkbox"/> Ribs					
<input type="checkbox"/> Lumbar		X	X		
<input type="checkbox"/> Pelvis		x		x	
<input type="checkbox"/> Lower Limbs (left)		X	X	X	X

Abbreviations:

- Π deambulation with two elbow-crutches
- X** acute-medium somatic dysfunction; x slight somatic dysfunction
- Π≠ deambulation with an ankle brace and one elbow crutch
- ≠ deambulation with just the ankle brace
- = deambulation without the ankle brace
- ↑ deambulation fast walking and running with no functional limitations



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OMT Evolution

The patient was given a total of five OMT sessions on day 2, 9, 12, 18, 25 (Table 1). During the OMT administration phase the external orthopaedic consultant advised the use of an ankle brace when, during the day, the ankle was under greater functional stress, to be removed gradually later on

Results

The patient was discharged 26 days after the trauma; on day 27 the club medical team took over and she had her first differentiated training; on day 51 she had her first competition

Discussion

In line with the osteopathic profession principles¹⁶, the OMT can be used in this clinical condition to promote body self-regulation and self-healing. The examined outcome measures show a significant improvement of the clinical condition from the baseline to the end of the study (Table 2) and the ability of the OMT to influence the phases of the healing process (Figure 1) and (Figure 2).

Table 2

Outcome Measures-Ankle Function Index

	Pain Section	Disability Section
Pre-OMT (baseline score)	79,7%	90%
Post-4 OMT score	51,1%	40%
Post-5 OMT end of study score	0%	0%

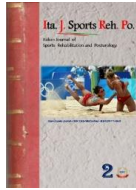
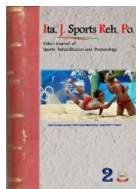


Figure 1 : Healing process phase day 9



Figure 2 : Healing process phase day 18

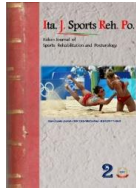


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The outcomes observed that the OMT does not just alleviate the pain and the disability associated with this clinical condition, but that it also enables damaged tissues to heal more effectively since they are stimulated by the fast recovery of physiologic movement and early functional activity¹⁷ facilitated by the elimination of the somatic dysfunction. Overall, early stimulation of the ligaments together with suitable rest enable the damaged tissue to gain strength and to protect joint stability¹⁸ whereas, immobilization or limited physical activity causes degenerative changes in the ligament structure, serious decrease of the diameter of collagen fibres and negative change of its metabolism^{19 20}. The athlete benefits from the normalization of movement and pain, for the functional, normal athletic performance resumption²¹. There are many OMT modalities reported in the literature that describe how the athlete went rapidly back to full activity since the beginning of the therapy²². The osteopathic management combined with rather than superimposed to the rehabilitation protocol for pre-post anterior cruciate ligament reconstruction²³ stressed that the application of the osteopathic principles relevant to the case in question, by means of OMT, that decreases the somatic dysfunctions, helped the patient reach normal function levels fast. In a study involving 459 people, it was possible to assess and explain patient's satisfaction and the OMT-related clinical results, stressing that those results suggested the need for a greater access to OMT services²⁴. Attributes such as endurance, flexibility, proprioception, space awareness are always sought after in sport-specific movements and to satisfy these requirements sport competitions need structurally and functionally healthy tissues²⁵. The positive effects of the OMT on the cinematic parameters of the spine, pelvis and hip movement show the effectiveness of OMT able to improve the movement range and the performance²⁶. Preliminary data were collected among American football players in order to acquire a better understanding of the link between pre-competition OMT and athletic performances. The study underlined that OMT was positively linked to improved performances²⁷

CONCLUSION

The OMT positive effects observed in this case report point out the need for planning randomized controlled clinical studies

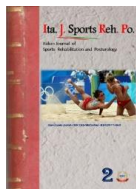


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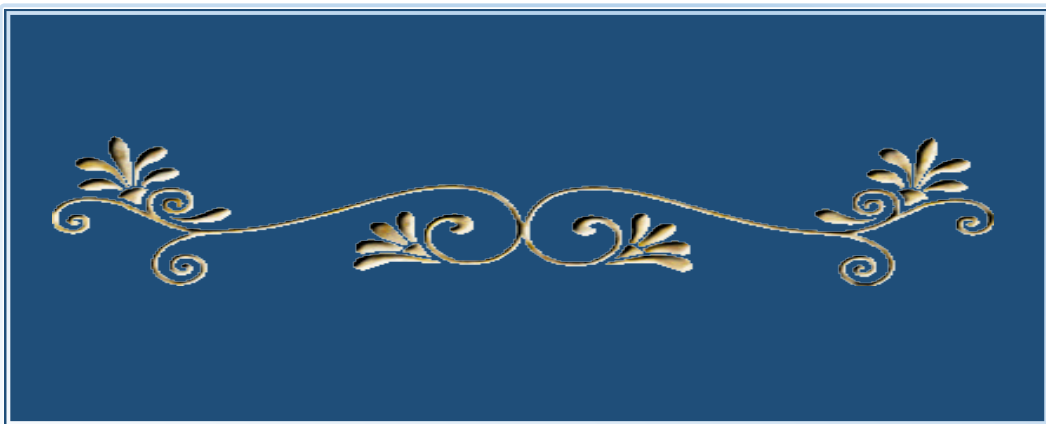
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