

# THE ROLE OF ORTHOTICS IN THE FOOTBALL

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## INTRODUCTION

The current knowledge of sports-related injuries emphasizes the importance of orthotic devices as a protective equipment. This work will analyse the role of the orthotic devices in treatment of some injuries of the foot in soccer players. The pathological processes that can be developed in the foot are caused by either simple acute traumas due to contact or microtraumas due to repeated stresses of the foot. The purpose of an ideal orthotics is to place the foot in a position with an improved mechanical advantage or efficiency, so joints and muscles will be more favourably positioned to deal with the repetitive forces applied to them.

## METHOD AND MATERIAL

We have examined and treated 120 soccer players afflicted from foot's pathologies arising from overload. The follow up is 2 years. The diagnostic approach included an objective examination by means of diagnostic x-ray records and after an evaluation of the patterns of the ground reaction force exerted by the ground on the foot. The ground reaction has been analysed during walking and running, to define as precisely as possible the characteristics of pressure and forces acting on the foot. Ground reaction forces are measured by means force platforms. The force platforms are commercially available and are usually based on strain gauges or piezocrystals. They resolve external forces in three directions and may be used to determine their point of application on the support surface.

## RESULTS

The treatment of foot's injuries involves before a biomechanical control with orthotics and after a proprioceptive rehabilitative programme for one month with many types of activities. These include rocker boards, tilt boards, balance beams, standing on one foot, hopping on one foot, throwing and catching a ball against the wall while standing on one foot. The treated pathologies due to overload have been: sinus tarsi syndrome (20 cases), plantar fasciitis (15 cases), heel pain (28 cases), metatarsalgia (35 cases), sesamoiditis (12 cases) and metatarsalgia of T.C. Morton (10 cases).

The results after the pathologies treatment demonstrated that this method has a positive interaction with the control of the foot's biomechanical disorders causing an overload syndrome. See table I.

**TAB. I**

sinus tarsi syndrome	100%
plantar fasciitis	100%
heel pain	100%
metatarsalgia	100%
sesamoiditis pain	100%
metatarsalgia of T.C. Morton	90%

## DISCUSSION

Several studies support the impression that orthotic devices reduce biomechanical stress and the incidence of injury. Taunton et al. used a triplanar electrogoniometer to evaluate the biomechanical changes associated with the use of orthotic devices in runners. They demonstrated a decrease in calcaneal eversion during the support phase of running. They also noted significant differences of response between right and left legs, suggesting the need for individual control of each foot. Bates et al. reported a reduction in the period and the maximum extent of pronation in runners wearing orthotic devices. Smith et al. used high-speed film to study differences in the control provided by soft and semi-rigid orthotic devices. The maximum velocity of calcaneal eversion was significantly reduced with both type of orthotics, but the maximum amount of calcaneal eversion was significantly reduced only when using the semi-rigid device. Usually there are many types of orthotic devices. The numerous types can be grouped into three categories: soft, semi rigid, rigid.

Our experience about the use of the plantar orthotics in football diseases of the foot, is that the orthotic devices should be of elastic and absorbing at various level material because our data suggest that controlling the velocity of eversion is more important than controlling the degree of eversion, and also that with those materials is possible to reduce of 20% the vertical forces that are applied on the plantar surface of the foot and well control the good alignment between leg and foot.

The technical construction should be related to the individual patterns of ground reaction force. An inappropriate or poorly constructed orthotic device can create injuries. Prefabricated orthotics provided by retailers, generally, offer limited or poor results. The only precise orthotic device must be made individually for each athlete.

## CONCLUSIONS

Orthotics are recommended for the athletes that present a biomechanical inefficiency and need long term management (Roy 1985). Orthotics are used to allow the foot to operate in a mechanically efficient manner (Subotnick 1983) thereby reducing the inflammatory response (Giek J.H. Saliba 1987). The orthotics changes the functioning of the foot and leg with each other during the support phase of running (Conloy 1984). Our opinion is that the plantar orthotic is an ideal supportable to control excessive motion of S.T.J. and to reduce the vertical and orizontal

forces and the rotational movement of the foot.

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