BIOMECHANICAL EFFECTS OF ORTHOTIC WEDGING ON SPORTS AND ACTIVITIES IN PATIENTS WITH PLANTAR FASCIITIS

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INTRODUCTION: Plantar Fasciitis is an inflammatory stress syndrome of the plantar fascia and the most common hind foot problem in runners (Anderson, 2000). It is related to the stress on the plantar fascia from the weight of and the activity combined with weight transfer up onto the toes which leads to metatarsophalangeal joint extension and causes a “windlass” effect on the plantar fascia. Different conditions such as excessive tightness of Achilles tendon, excessive or prolonged pronation, pes cavus, or obesity can overload the plantar fascia origin on the anteromedial aspect of the calcaneus during weight bearing activities (Taunton et al, 1996).

METHOD: Participants in this study were 15 patients (9 female and 6 male) with 18 feet involved, ranging between 30 and 45 (SD+/- 3.31) in age. The patients had at least two months pain of experience without using corticosteroid drugs. All of them had normal medial longitudinal arch. The intervention targeting the problem was the use of a medial heel wedge. Assessment of the patients was conducted by the sports and recreational activities and ADL (Activity of Daily Living) subscales. Subjects also walked on a 12-meter walkway in order to measure the step and stride length. Reassessment of the patients was carried out in the second and forth week after intervention. It was a double-blind, prospective study.

RESULTS: Sports and recreational activities and ADL subscale scores showed a significant improvement in both follow-up sessions. Step and stride length also demonstrate a significant difference. ($p<.05$)

DISCUSSION: Interpretation of the results suggested that Medial Heel Wedge improved the sports and recreational activities and ADL subscale scores of the patients by distributing the biomechanical forces from the point inflamed to other places on the plantar surface**,** converting the heel into inversion and decreasing the plantar fascia stretch in its origin site.

CONCLUSION: These patients tend to decrease the stance phase time due to the pain, therefore the step and stride length shortens. Accordingly, sports and recreational activities and ADL of the patient diminish. Using the orthotic maintains the subtalar joint in a more neutral position. The medial heel wedge prevents excessive heel eversion, and the orthotic helps prevent excessive midfoot pronation. The result is a significant decrease in (and, in some cases, complete elimination of) heel pain at the insertion of the plantar fascia and along the medial longitudinal arch during weight-bearing activities.

REFERENCES:

Anderson, M. K., (2000). Sport injury management. 2nd ed, Philadelphia: Lippincot Williams and Willkins, 509.

Taunton, J. et al. (1996) Leg, foot and injuries. In Zachazewski, E., Magee, D.J., Quillen, W.S. (ed.), Athletic injuries and rehabilitation (748), Philadelphia: W.B. Saunders Company,