EFFICIENCY OF DIFFERENT THERAPEUTIC TREATMENTS OF CHRONIC ACHILLES TENDINITIS IN RUNNERS

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INTRODUCTION

Recent studies on the epidemiology of running injuries show that there has been a shift from knee complaints towards Achilles tendon problems (Mayer 2001). According to the literature, such different factors as biomechanical malalignment, insufficient muscle strength & flexibility and improper footwear are a cause of Achilles tendon complaints in runners (Fredericson 1996). Some of the most common therapies in the treatment of Achilles tendon problems are based on this knowledge. Current procedures in physiotherapy mainly deal with the activation of muscles to support the coordination of stability. Optimization of alignment problems due to the use of orthotics usually deals with the limitation of the pronation movement during stance, as well as with the stabilization of the heel at touch-down. As common therapeutic treatments are time and cost intensive, as well as often unsatisfying (e.g. rest) for the athletes, the aim of the following study was to find out the effectiveness of different therapeutic modalities of pain reduction in runners with chronic Achilles tendon problems. Further interest was to see if a possible pain reduction would affect the loading patterns (plantar pressure distribution) in addition to muscular strength (isokinetics).

METHODS

75 patients suffering from chronic Achilles tendon problems were assigned to this prospective study. Patients in this study were randomly and equally assigned into the following therapy groups: Control (no treatment), Rest, Physiotherapy (coordination, eccentric strength training, ultrasound and cross-frictional massage) and Orthotic (heel stability, pronation control). All patients had to undergo a clinical examination at measurement day 1 (M1), where injury status and location were diagnosed. Two weeks later, patients had to undergo biomechanical testing (M2). Plantar pressure distribution data (EMED-SF, 4 sensors/cm^2, 50 HZ) during barefoot walking (speed 5km/h) as well as during running (Pedar mobile, 1 sensors/2cm^2, 99 HZ) in a neutral shoe and own shoe (speed 80% of Individual anaerobic threshold (IAT)) was collected on a walkway and a treadmill, resepectively. In addition, isokinetic measurements (Lido Active, 1000Hz) were performed (plantar and dorsal flexion, concentric & eccentric) on the upper ankle joint. Pain data (disturbance of daily living, palpation pain) was recorded at the beginning of M2, after the treadmill run and after isokinetics. After a 4 week therapy phase (M3), the same setup was used to collect the biomechanical and pain data. Statistical analysis resulted from descriptive analysis at first, as percentage of M2 by M1 (M2/M1x100). Afterwards, data was analyzed using an ANOVA for repeated measures (α=0.05). Group differences were based on the Tukey Kramer Test (α=0.05).

RESULTS AND DISCUSSION

Pain reduction was statistically significant different for the Orthotic group (p=0.01). Physiotherapy and Rest groups showed a decrease in pain, but were not found to be statistically significant due to the large ranges within the groups. Control group didn´t change at all (Figure 1).

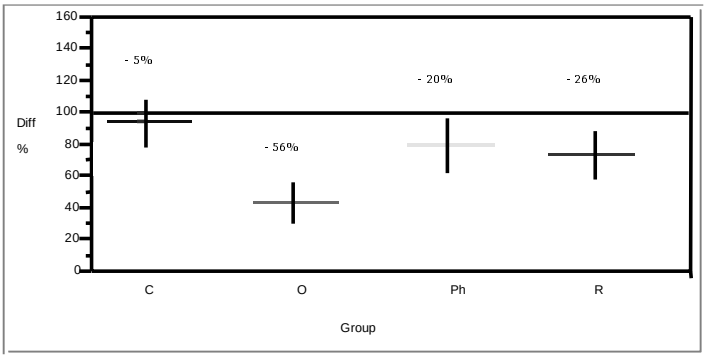

Figure 1: Mean Pain Disability Index (± SD) as percentage of M2 by M1 (C=Control, O=Orthotics, Ph=Physiotherapy, R=Rest)

Statistically significant differences (p=0.01) could be verified in the loading patterns (push-off, touch-down) for the Physiotherapy and Orthotic groups. Maximum eccentric angular moments at plantar flexion (60°/s) increased statistically significant (p=0.01) for

all therapy groups (besides Control). Concentric moments in endurance testing at dorsal flexion (180°/s) were found to be statistically significant higher (p=0.01) for Physiotherapy and Orthotic groups and lower (p=0.01) for Rest group.
The change in plantar pressure loading (push-off and touch-down) in all "active" therapy groups as well as the increase of angular moments (maximum and endurance) in the Physiotherapy and Orthotic groups is mainly explainable with the decrease of pain. The decrease of angular moments (endurance) in the Rest group, however, might be due to the inactivity during treatment time.

SUMMARY

There is clinical (and statistical) evidence that different therapeutic modalities are effective in treating chronic achille stendinitis in runners. Changes in loading patterns as well as in muscular strength after the 4 weeks therapy phase. Are most commonly explainable with the reduction of pain as well as with the specific treatments (physiotherapy). Rest is an efficient treatment with regard to pain relief but leads to an decrease in muscular strength. Moreover, more than 50% of the Pain group returned within 3 weeks with re-occurant Achilles tendon problems.

REFERENCES

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