Effects of Lower Extremity Muscle Resistance Training on Navicular Drop and Leg Alignment in Participants with Flatfoot

Pes planus, also known as flatfoot, is characterized by overpronation of the foot and misalignment of the ankle, knee and hip joint that can increase the risk of lower extremity injuries. Current literature has focused primarily on intrinsic muscles, but the findings regarding their effectiveness remain inconclusive, while extrinsic muscles are often overlooked. **PUPROSE:** To examine the effect of a resistance training of two extrinsic foot muscles on navicular drop and leg alignment in participants with flatfoot. **METHODS:** Five college students with a Foot Posture Index (FPI) greater than 6 (FPI = 8.4±2; age = 21.2±1yr; BMI = 20.8±3) participated in the study. Participants performed an exercise protocol 3 times per week for 6 weeks, consisting of tibialis raises and ankle inversions, which targeted the two extrinsic muscles responsible for inverting the foot; tibialis anterior and tibialis posterior. Pre- and post-testing included evaluations of navicular drop and leg alignment during walking and jogging in three conditions: barefoot, shod, and with insoles. **RESUTLS:** Statistical analysis revealed a significant decrease (10%; p =.014) in navicular drop during jogging in the shod after the 6-week training program, while there was no significant changes in barefoot condition. Regarding leg alignment, there was 27% reduction in knee abduction that was significant (p=.04). **CONCLUSION:** The present findings suggest that specialized resistance training of the foot invertors can play an important role in leg alignment in individuals with flatfoot.