

Pailin Puagprakong 2009: Significant Factors of Plantar Fascia Thickness in Normal and Flat Feet of Female Runners. Master of Science (Sports Science), Major Field: Sports Science, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Siriporn Sasimontongkul, Ph.D. 94 pages.

This research aimed to compare the thickness of plantar fascia in normal and flat feet and to observe the possible factors inducing plantar fasciitis which lead to the thickening of plantar fascia. Twenty college runners, aged  $17.6 \pm 2.48$  years, participated in the study. They were divided into two groups, based on “Navicular height”, of normal feet and flat feet. Each group comprised of ten runners. For the flat feet group, both feet were diagnosed as flat feet but one foot had a past history of plantar fasciitis. The plantar fascia thickness of both feet were evaluated using high-frequency sonography. To observe factors that might affect the thickness of plantar fascia the following procedures were performed. Subjects ran at a speed of 3.5-4 m/s across a force plate and their foot hit the force plate to collect ground reaction force. Finally, achilles tendon force was evaluated using an isokinetic machine and the peak torque of plantarflexion was reported. Thereafter, two-way ANOVA and one-way ANOVA with repeated measure were applied to the data in order to determine the difference among groups. The statistical significance was set at .05.

The results showed that plantar fascia thickness of flat feet and normal feet runners were not significantly different with their mean and S.D. equal to  $2.93 \pm 0.39$  mm and  $2.84 \pm 0.50$  mm, respectively. Hence, the abnormal arch, flat arch, does not induce a congenital plantar fascia abnormality. Moreover, tension force from achilles tendon together with a flat arch were the factors that related to the inflammation and the thickness of plantar fascia.

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Student's signature

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Thesis Advisor's signature

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