

## The Effect of Taekwondo on Plantar Pressure Distribution and Arch Index

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**Abstract :** The objective of this study is 1) to compare elite female and beginner taekwondo players in terms of plantar pressure distribution, vertical ground reaction force, contact area, mean pressure, and right and left longitudinal arches, and 2) to compare preferred and non-preferred limbs among elite players. To the best of authors' knowledge, as of yet, there is no information available about the plantar pressure distribution and arch index among taekwondo players. Material and Methods: An analytical-comparative research method is applied. Therefore seven elite athletes and eight novice athletes were selected. The emed-C50 platform was used to assess plantar pressure distribution, vertical ground reaction force, contact area, mean pressure of different areas, and planter longitudinal arch in a second step protocol. Independent t-test and dependent t-test were used at a level of 0.05 to compare the elites and beginners' right and left feet, and preferred and non-preferred limbs among elite athletes, respectively. Results: In comparing the right and left limbs of elite and beginner groups, findings indicate that there is only a significant difference in the mean pressure of the first metatarsal of the right foot. Findings also showed a significant difference in the contact area of the toes 3, 4, 5 regions between elites' preferred and non-preferred limbs. However, no significant difference was found between the two groups' right and left limbs and elites' preferred and non-preferred limbs in terms of pressure distribution, vertical ground reaction force, and arch index. Conclusion: It seems that taekwondo exercises have affected pressure distribution patterns among advanced players causing some differences in their planter pressure distribution pattern when compared to that of beginners. Therefore, taekwondo exercises may be a factor contributing to asymmetry performance in preferred and non-preferred limbs.

**Keywords :** planter pressure, arch index, taekwondo, elite

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