

EXTENSION FORCE OF LOWER EXTREMITY IN TAEKWONDO ATHLETES

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INTRODUCTION: Taekwondo is form of athletics involving lower limb movement. In this sport, knee extension is important. As a result, the maximum extension force index of knee is one of important force targets for Taekwondo athletes to achieve. The focus of this experiment is the lower extremity force of an experienced male Taekwondo athlete. The purpose of this study is to understand the kinetic of lower extremity force and to find some regularity so as to provide scientific reference for training and selecting the Taekwondo athlete.

METHODS: BLR_1 pull-sensor and KISTLER force platform were used to test the extension and flexion force of knee and the stretch force of lower extremities, respectively. Subjects selected for the study included five elite athletes (22 ± 5 years) and five novice athletes (22 ± 3 years). All athletes had the same experiences of training and training history in two postures. One group was to have the trunk fixed and the other was not. All the data collected in the tests were processed.

RESULTS: Both extension force index of knee and the stretch force index of lower extremity of the champion athletes were higher than those of the non-elite athletes ($p < 0.05$). There was no apparent difference in the force index of genuflex between the two groups ($p > .05$). Regardless of champion athletes and novice athletes, there were notable difference in the extension force index of knee and the force index of genuflex with the two postures ($p < .05$). This was seen particularly in the extension force index of knee ($p < .001$).

DISCUSSION: The result indicated that the extension force index of knee was key to the grade of the taekwondo athletes. There are weight classes in Taekwondo sport. The athlete who has a higher extension force index of knee can give his opponent a greater blow. The genuflex movement was less important in competition, compared to the knee extension. So there was no difference in the force index of genuflex between champion athlete and novice athlete.

There is some stretch movement in Taekwondo .The stretch force index of lower extremity is also one of important force targets of taekwondo athletes. Superior stretch force index can cause an opponent to loose the game.

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