

## A Kinematic Comparison of the Visual Impairment Running and Low Vision Running

Rachnavy P (Ph.D), Khaothin T (Ph.D)

School of Sports Science, Suranaree University of Technology, Nakhorn Ratchasima, Thailand

### Abstract

**Introduction:** Although the walking of the visually impaired will be familiar to us. There are a number of studies on various aspects of walking in the visually impaired about achieving efficiency and safety in walking (Johnson JT, Johnson BF, Blasch BB, 1998; Takashi Nakamura, 1997). However, for the running in the visually impaired, there are also a small number of studies, because the chances that people with visual impairment will run is less. The researcher is interested to study the comparison of running behavior between visually impaired children and low vision children.

**Methods:** study the kinematics of running, twenty participants, 10 visually impaired (age 16-20 years old, average 17.2 years old) and 10 low vision (16-20 years old, average 17.6 years) were selected for this study. A digital camera (60 Hz) was used to record motion while running a 3 km run with a guide runner. SkillSpector program was used to analyze the data (joint angles (hip knee & ankle) and joint angular velocity (hip knee & ankle). Sagittal plane two-dimensional kinematic data were captured and analyzed for a single stance phase.

**Results:** The studies show that there is a significant difference between visually impaired children and low vision children in the hip knee and ankle angle. The study found that the angle of the low vision is lower than visually impaired. It is found that running of the visually impaired will not have airborne. The highest extension of hip, knee, and ankle was found in the heel strike of the visually impaired. The highest extension angle of the low vision occurs when the toe-off. It is also found that the angular velocity of the hip knee and ankle of the low vision children is greater than the visually impaired children.

**Conclusions:** Based on these results, we conclude that running of the visually impaired person demonstrates an attempt to balance the body in order to maintain stability while running and for safety. By running slowly, the center of mass falls into the base of support while the heel touches the ground to increase safety while running, by running at a lower speed, the step is shorter and the foot.

**Keywords:** Kinematics, Visual impairment, Low vision, Running