# *ABSTRACT*

Proper posture while running is an important factor in reducing the risk of injury and improving movement efficiency. This study aims to design a posture monitoring system while running on a treadmill with a limitation on measuring body tilt angle (theta) using motion tracking method with perspective correction. This system is intended to develop a method of measuring running posture on a treadmill as well as the effect of running speed on body posture.

The method used in this research involves visual marker detection as a position reference on the subject's body. Perspective correction is applied to improve the accuracy of marker position in 2D coordinates. Data was collected on several subjects with variations in running speed. Analysis was performed on the changes in theta angle at each speed and subject to see the movement and posture patterns.

The test results show that the system has an average error of 3.05 mm on the horizontal (x) axis and 13.77 mm on the vertical (y) axis. The higher vertical error is due to the friction of the paper on the marker printing media. The data showed differences in posture characteristics between subjects and a tendency for the theta angle to decrease (more slouched posture) as the speed increased. This study could potentially be used to help runners improve their posture to increase stability and reduce the risk of injury.



**Keywords:** *biomechanics, motion tracking, perspective correction, running posture, treadmill.*