
Aims and Objectives

4.0 AIMS AND OBJECTIVES

4.1 AIM OF THE STUDY

The present study was designed to develop Artificial Intelligence based technology-driven pose estimation and correction software to assess and evaluate specific yoga postures to understand the level of accuracy and to validate this technologically-driven assistive tool in normal healthy individuals while performing specific yoga postures.

The aim of the study was to assess the accuracy of the yoga postures using a machine learning algorithm.

4.2 OBJECTIVES OF THE STUDY

Today, Artificial Intelligence is used in several aspects involving human life. The technology has made way in applications related to industrial, medical, healthcare and now in fitness as well. Artificial Intelligence uses computer vision techniques to detect human poses from a video or image in real time. In this work five selected yoga postures have been trained using a machine learning algorithm to estimate the pose by extracting the key points of the body joints. A comparative analysis of the person performing yoga in real time is done by detecting the angles at every joint and comparing it with reference data and there by calculating the deviation. A corrective action for the poses performed is also providing through voice assistance.

The main objective is to

- To develop a database of correct yoga postures (images)based on classical yoga text.
- To develop neural network model for standardization of correct yoga postures database.

- To assess the accuracy of yoga postures in real time using a machine learning algorithm.

4.3 JUSTIFICATION OF THE STUDY

It is a well-known fact that practicing yoga has benefits on physical and mental health. However, practicing yoga without professional guidance can lead to severe pain and chronic problems. People who perform wrong yoga postures because of a lack of knowledge or guidance, push themselves beyond their strength and are very much likely to strain or injure themselves. Therefore, this study will develop a standardized database of five yoga postures using machine learning and artificial intelligence methods to perform pose estimation and correction in real-time.

4.4 HYPOTHESIS

- The MediaPipe architecture may be useful to detect the correct yoga postures from a defined database.
- The correct yoga postures may be evaluated by using a neural network model and machine learning techniques.

4.5 NULL HYPOTHESIS

- The MediaPipe architecture may not detect the yoga postures correctly from the database.
- The correct yoga postures may not be evaluated by using a neural network model and machine learning techniques.