
Comparison of Biomechanics of a Tea Worker in Ascending and Descending Tea Plucking in Sri Lanka

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Sri Lankan tea the industry is still using the traditional tea plucking method i.e. selective plucking that makes higher quality tea. The main three tea growing regions classified based on the elevation as high grown, middle grown and low grown are naturally found with uneven terrains, high slopes and narrow footpaths. Most of the fieldworks in the tea industry Sri Lanka are performed manually and mostly by women. The tea plucking and carrying of tea leaves till the end of the collection journey is laborious and time-consuming. The body movements of a tea worker during the field working is consisted of ascending and descending the terrain, lateral walking and repetitive flexion, extension and rotation of the spine during the plucking. Tea workers have to maintain static awkward posture during the plucking to support the weight of the tea basket. A proper motion study and analysis of biomechanics will help to identify various work-related deceases and thereby design systems to improve the worker productivity, safety and comfort. The main objective of this study is to analyse the biomechanics of tea workers. A field study was carried out in *Udu Pussallewa* tea growing region to collect data about tea workers, their health issues, walking paths while plucking, tea baskets, plucking and collection rate, and field conditions. Biomechanics analysis is carried out for typical anthropometric values of two subjects. Our study also compares the tea plucking in ascending and descending that are in practice in different tea growing regions. The result of the analysis shows the variation of the ground reaction force and the joint forces of a tea worker in ascending, descending and lateral walking while carrying the tea basket. Our final aim of the study is to develop various supporting mechanisms to tea workers to ease their job in the field.

Keywords: Biomechanics, Ceylon tea, Tea plucking, Tea workers