

## Integrating Ergonomics at Design Stage in Development of Continuous Passive Motion Machine

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**Abstract :** A continuous passive motion machine improves and helps the patient to restore range of motion in various physiotherapy activities. The paper presents a concept for portable CPM. The device is used for various joint for upper and lower body extremities. The device is designed so that the active and passive motion is incorporated. During development, the physiotherapist and patient need is integrated with designer aspects. Various tools such as Analytical Higher Hierarchy process (AHP) and Quality Function Deployment (QFD) is used to integrate the need at the design stage. With market survey of various commercial CPM the gaps are identified, and efforts are made to fill the gaps with ergonomic need. Indian anthropomorphic dimension is referred. The device is modular to best suit for all the anthropomorphic need of different human. Experimentation is carried under the observation of physiotherapist and doctor on volunteer patient. We reported better results are compare to conventional CPM with comfort and less pain. We concluded that the concept will be helpful to reduces therapy cost and wide utility of device for various joint and physiotherapy exercise.

**Keywords :** continuous passive motion machine, ergonomics, physiotherapy, quality function deployment

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