**Hand Operated Based Tricycle For Handicapped People**

**ABSTRACT:**

In this experimental study on a prototype lever-propelled wheelchair, the effect of a range of mechanical advantages (MA) on physical strain, oxygen uptake, energy cost, mechanical efficiency, stroke frequency and perceived exertion was examined. Wheelchair propulsion has been reported to be responsible for musculoskeletal pain in the upper extremities. Epidemiological studies have shown a high prevalence of shoulder complaints in paraplegic and quadriplegic spinal cord injured (SCI) people. It has been argued that the high incidence of shoulder complaints in SCI was the result of the weight‐bearing or propulsion function of the upper extremity in those subjects. This work aimed at proposing an alternative wheelchair propulsion technique based on the levers’ system. The interface prototype‐users, the wheelchair skills evaluation, the oxygen uptake and the cardiac frequency are investigated by an objective and subjective studies. Our prototype is designed to be an attempt in the field of disabled athletes having some advantages of a non‐ conventional manual wheelchair propulsion technique, avoiding complications induced by the conventional one.