

REVIEW ON MODIFIED HANDICAP CYCLE

Guide By

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Abstract: When manual operated handicap cycle is very difficult to drive a cycle. When this cycle has required more efforts. In this cycle has continuous peddling in one hand & controlling in one hand. In this caused by person has get more efforts like that. Lack of concentration, continuous driving get effect on one hand. But in this project we are solve all problems. In this cycle has peddling and controlling at same time. In this cycle has less effort more speed given in this cycle. In this cycle is also used sports, Gym exercise, & many More.

1) **Introduction:** 15% of the world's population, experience some form of disability, and disability prevalence is higher for developing countries. But INDIA also lot of people has disable. In this people has various reason get People get handicap.

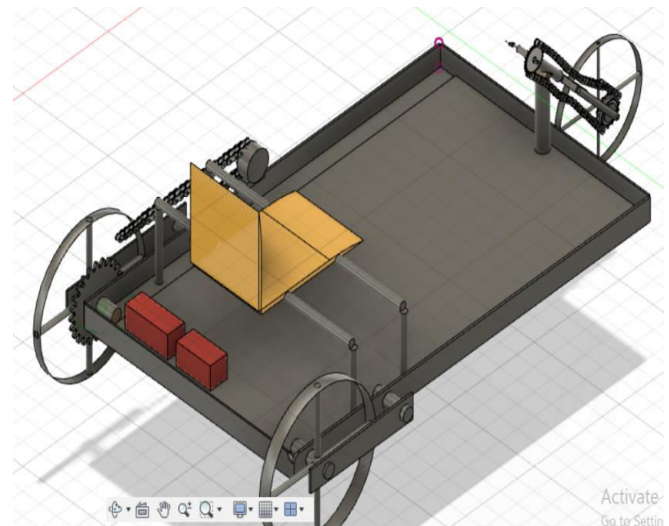
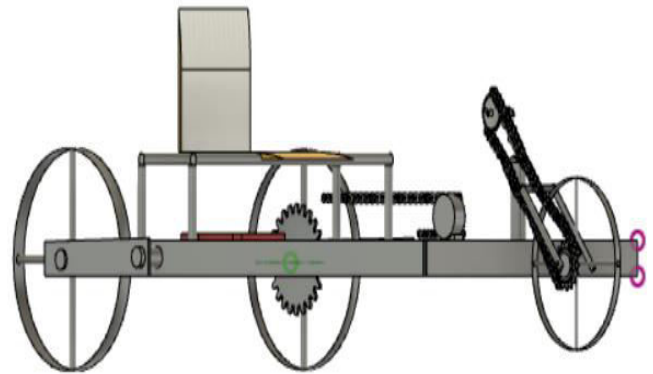
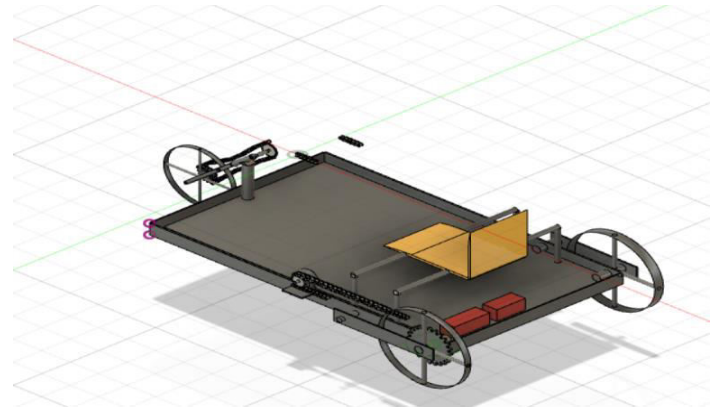
In this handicap people has provided handicap cycle by the government. Government provided cycle is difficult to drive one place to another. In this cycle has get more effort. Current Handicap Cycle technology is relatively well established in that there is not a great deal of variation in the Handicap cycle market, which can create difficulties for individuals whose needs are not met by currently available model. Many of the conditions that restrict an individual to reliance on a wheelchair also limit control of the upper extremities to the extent that the user can only operate the chair with one hand.

This project focuses on the design of the Handicap Cycle and method of transforming it from regular wheelchair into a recumbent tricycle. Additionally the method of manufacture both in the workshop and on a commercial scale will be considered. The project will aim to conclude with a basic Finite Element Analysis (FEA) of the chosen wheelchair frame design. This project aims to design and fabricate a prototype tricycle to improve mobility of the motor-disabled with healthy upper torso but pelvic to foot restraint. Tricycle became highly acceptable, in INDIA.

2) **Manual Handicap cycle:** are those that require human power to move them. Many manual wheelchairs can be folded for storage or placement into a vehicle, although modern wheelchairs are just as likely to be rigid framed. Manual or self-propelled wheelchairs are

propelled by the occupant, usually by turning the large rear wheels, from 20-24 inches (50-60 cm) in average diameter, and resembling bicycle wheels. The user moves the cycle by pushing on the handrims, which are made of circular tubing attached to the outside of the large wheels. The handrims have a diameter that is slightly less than that of the rear wheels. Skilled users can control speed and turning and often learn to balance the cycle on its rear wheels — do a wheelie. The wheelie is not just for show — a rider who can control the chair in this manner can climb and descend curbs and move over small obstacles.

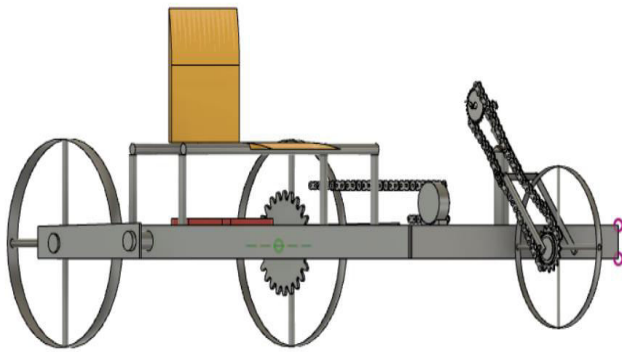
One-arm drive enables a user to guide and propel a cycle from one side. Two handrims, one smaller than the other, are located on one side of the chair, left or right. On most models the outer, or smaller rim, is connected to the opposite wheel by a folding axle. When both handrims are grasped together, the chair may be propelled forward or backward in a straight line. When either handrim is moved independently, the chair will turn left or right in response to the handrim used. Another alternative is a Lever Drive chair that propels the chair forwards by using a lever that is pumped back and forth. Some chairs are also configured to allow the occupant to propel using one or both feet instead of using the rims. Attendant-propelled chairs (or transport cycle) are designed to be propelled by an attendant using the handles, and thus the back wheels are rimless and often smaller. These chairs are often used as 'transfer cycle' to move a patient when a better alternative is unavailable, possibly within a hospital, as a temporary option, or in areas where a user's standard cycle is unavailable. These chairs are commonly seen in airports. Special airplane transfer chairs are available on most airlines, designed to fit narrow airplane aisles and transfer wheelchair-using passengers to and from their seats on the plane.



3) Project Details:

3.1) Project Images

3.2) CAD Diagram- Fusion 360



3.3) Formulas

i) Relation Between pitch and Pitch circle Diameter

$$D = p \operatorname{cosec} \left(\frac{180^\circ}{T} \right)$$

D=Diameter of pitch circle

T=Number of teeth on the spoket

ii) Velocity Ratio Of chain Drive

$$v = \frac{\pi DN}{60}$$

iii) Length of chain & center Distnce

$$\therefore K = \frac{T1 + T2}{2} + \frac{2x}{p} + \left[\frac{T2 - T1}{2\pi} \right]^2 \frac{p}{x}$$

$$x = \frac{p}{4} \left[K - \frac{T1 + T2}{2} + \sqrt{\left(K - \frac{T1 + T2}{2} \right)^2 - 8 \left(\frac{T2 - T1}{2\pi} \right)^2} \right]$$

3.4) Components used In Project

i) Angle Bar- When an this angle bar is to build frame & hold the all body structure. When this projet we are used 30×30 angle bar.

In this body has 41×24in body structure.when this structure are made by M.S.



ii)Old cycle Handdle-In this project cycle handdle is get important role play on it. When this cycle handdle is work hanndle as well as paiddle which is very usefull to handicap people.



iii)Gear Set Up-

- Material: Rubber and Steel
- Durable and long lasting products
- We are offering you Combo of 7 Bicycle Accessories. It will help in finding all needed items in one click. Component list: (Wheel chain set, Free wheel, Gear Cable, Gear chain, Derailleur, Gear Cable with Plastic body, 1 pair of Side bar handle)
- Package Includes: 1 Wheel chain set, 1 Free wheel, 1 Gear Cable, Gear chain, 1 Derailleur, 1 Gear Cable with Plastic body, 1 pair Side bar handle. Note: In image only single Handle bar is shown.



iv) Disc Brack

- Pack of 5 components : Cycle accessories for mountain cycling cyclocross
- Mechanical disc brake caliper Used for all kind of mountain bike or folding bicycle. Fit front 160mm brake disc or Rear 140mm brake disc
- Disk break plate: Suitable for Flanged threaded type Disc Brake system for Mountain Bike Bicycles. Outer Diameter of the Disc: 160mm. Inner Diameter of the Disc: 48mm. Material:Stainless Steel - Weight:Approx.120+-20g/pcs - Size:160mm*1.9mm 5.5/6/7 inch - Bolts :Included 6 bolts/pcs Universal can be used for both rear or front wheel

- For Universal, Mountain Bike, Road Racing Bike. Perfect Flatness And Incredible Smooth.
- Refitting bracket can refit normal bicycle to updated into disc brake bicycle Can be converted into ordinary bicycle disc brakes bicycle Suitable to any type of bike: bmx, mtb, mountain biking etc Note: only compatible with disc brake pad.



v) Grar Moter-

- Key features 24 volt 250 watt 9 tooth 1/8" bicycle chain sprocket left or right rotation by reversing wires my1016z2 motor with gear reduction 300 rpm (after reduction)
- That is why we are proud to present the 24 volt 250 watt my1016z2 gear reduction motor complete with a 9 tooth 1/8" bicycle chain sprocket
- This motor is great for those wanting to make their own custom electric vehicle, whether it's a scooter, electric bicycle or something the world isn't even ready for
- This electric motor with gear reduction produces more low-end torque than your standard motor
- Note: This motor is capable of rotation in either the clockwise or counter clockwise direction by reversing the motor's power wires.



vii) Battery- A rechargeable battery, storage battery, or secondary cell, (or archaically accumulator) is a type of electrical battery which can be charged, discharged into a load, and recharged many times, as opposed to a disposable or primary battery, which is supplied fully charged and discarded after use. It is composed of one or more electrochemical cells. The term "accumulator" is used as it accumulates and stores energy through a reversible electrochemical reaction. Rechargeable batteries are produced in many different shapes and

sizes, ranging from button cells to megawatt systems connected to stabilize an electrical distribution network. Several different combinations of electrode materials and electrolytes are used, including lead-acid, zinc-air, nickel-cadmium (NiCd), nickel-metal hydride (NiMH), lithium-ion (Li-ion), and lithium-ion polymer (Li-ion polymer).

Specification- 24V 13Amp.

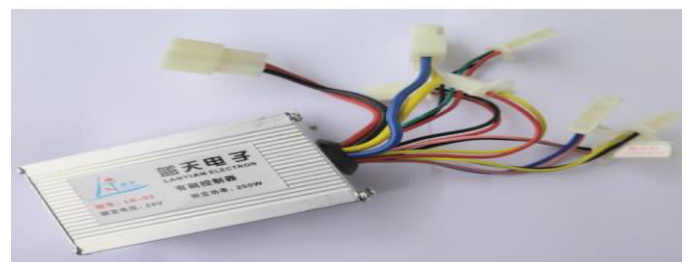


viii) Controller-

A **motor controller** is a device or group of devices that serves to govern in some predetermined manner the performance of an electric motor.^[1] A motor controller might include a manual or automatic means for starting and stopping the motor, selecting forward or reverse rotation, selecting and regulating the speed, regulating or limiting the torque, and protecting against overloads and electrical faults.

There are many types of starters:

1. Direct On Line (DOL)
2. Star delta starter
3. Auto transformer starter



ix) Accelerator

Fit:12V,24V,36V,48V,60V,72V electric vehicles can be used directly, part of the 84V electric vehicles can also be used

Automatic to identification electric vehicles' voltage under 100V,universal used and real-time display.

Specifications:

Material:Aluminium Alloy + Rubber

Wire Length: approx. 2m / 78.7"

Type: 3 gears switch,high,middle,low speed (need controller to support)

Compatible With:Suitable for 12V-99V Electric Bicycle

Fitment: Fit for 22.2mm diameter handle

Working Voltage:Throttle DC0.8-4.2V, battery level indicator,12-84V automatically identify.

Compatible With:Universal throttle for electric bike,scooter,tricycle,other electric vehicle

7 Wires:

Yellow is for power positive,usually connect with battery power + 24V 36V 48V

3 throttle wires:

Red is for throttle positive + 5V,Green is for twist throttle signal wire,Black is for throttle negative

The other three white blue and brown is for gears

3,Make sure your controller has 3 gears wire

White is for high speed,Blue is for middle speed shared

line,Brown is for low speed.

**3.5) Reference**

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