

TWICYCLE

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Abstract - During the revolution for eco-friendly technologies, cycling was the most dependent mode of transport, along with the increase in fuel prices and environmental factors which we believe is the use of bicycles on motor vehicles is far better than the smallest for travel distance. Imagine that if a small effort by a man to climb bicycles and climb on rugged terrain, then how useful will it be in this, and then it gets reduced.

We thought the only way to develop this is "The TWICYCLE". The unit developed is a combination of Front Chain and Sprocket and Rear Chain and Crockett Mechanism. The system is modified in such a way that the rider can choose the mode of what he prefers, that means he can either choose to run the bicycle completely by hand or run it on the feet And can drive with both hands and feet.

INTRODUCTION

Cycling is an easy and less effective activity that can significantly improve personal fitness and has the potential to make a big impact on public health. It can help reduce the risk of health problems, especially heart disease and a range of cancers, which are premature preventable causes of death. In a country like UK, where obesity is at the level of epidemic among adults and youth, one of the main benefits of cycling is that people can do it as part of their normal daily activity - by cycling, to work Or shops to see friends - instead of finding extra time for exercise. One study found that those who cycle to work, they experience less than 9% of mortality compared to those who, after adjusting for other risk factors including the physical activity of the holiday, 1 also no. Getting on your bike can get health benefits similar to doing a special training program. In most days of the week, cycling for an additional 0 minutes, with the reduction in calorie intake, can reduce weight compared to three aerobic classes achieved by the week. Along with improving physical health, cycling has a positive effect on emotional health - improving levels of fatigue, stress, difficulties with sleep and levels of wellness, self-confidence and tolerance for stress during a range of medical symptoms.

Cycling has been a major means of mobility in India. Traffic surveys show that in most cities, bicycle trips are for more than 15% visits, and even in big cities like Delhi, there are cycles for more than 10% visits in the city. This is largely because bicycles play a major role in enabling urban poor's livelihood by providing a cost effective transportation option. In recent years, health and environment have emerged as new drivers supporting quality cycling activity, but due to these drivers, our drivers have been interrupted by cycling environment and infrastructure. It is unfortunate for the increase of bicycle stock, because Indian cities with mixed land use patterns are relatively short distance - the length of travel in Indian cities is less than 5%, and 80% less than 10%. Km. These are the length of ideal travel for cycling, and provide an extremely effective alternative for India to go into a mobility mode with zero greenhouse emission emissions. As a result, with the rules on the use of private motorized vehicles, policy measures must be implemented to increase the share of cycling to build and provide large-scale safe cycling infrastructure.

Bicycle is one of the most sustainable methods of transportation. Apart from zero dependence on fossil fuels, zero emissions and pollution, increase in physical activity, health benefits, besides being a cheap means of mobility for low-income homes, there are many benefits. For these individuals, especially in rural areas, it improves access to jobs, education and healthcare facilities.

Hence cycling is one of the best practices you can get. It's almost the same for your body's muscles and how good they are to keep it fit. But it doesn't do much for your upper body.

TWICYCLE works out your whole body by allowing you to use your arms, legs or both.

If you are a Cyclist, you will not have to do any extra activity to work on your upper body. This bike does do it all.. In the toe, you can work out of your entire body by using front cranks. By using this bicycle you can fire up your triceps, chests, lats, biceps, back and shoulder and also strengthen your core.

LITERATURE SURVEY

The most substantive study in this category was carried out by researchers from the Copenhagen Center for Prospective Population Studies. Using self-reported assessments of health, blood pressure, cholesterol, BMI, and risk factors such as smoking, the researchers concluded that: "Even after adjustment for other risk factors, including leisure time physical activity, those who did not cycle to work experienced a 39% higher mortality rate than those who did."⁽¹⁾

Dutch research has demonstrated that cycling as part of normal daily activity can yield much the same improvements in physical performance as specific training programs. The higher the total distance cycled during a six-month trial period of activity among men and women (who had not participated in regular intensive exercise over the previous six months), the higher the gain in maximal external power and maximal oxygen uptake.⁽²⁾

Research from Finland provides some of the strongest evidence for the health benefits of cycling, particularly two studies which suggest that journeys to and from work by bicycle provide exercise of sufficient intensity and duration to improve fitness and health, and that travel by bicycle provides greater increases in measured fitness than does walking.⁽³⁾

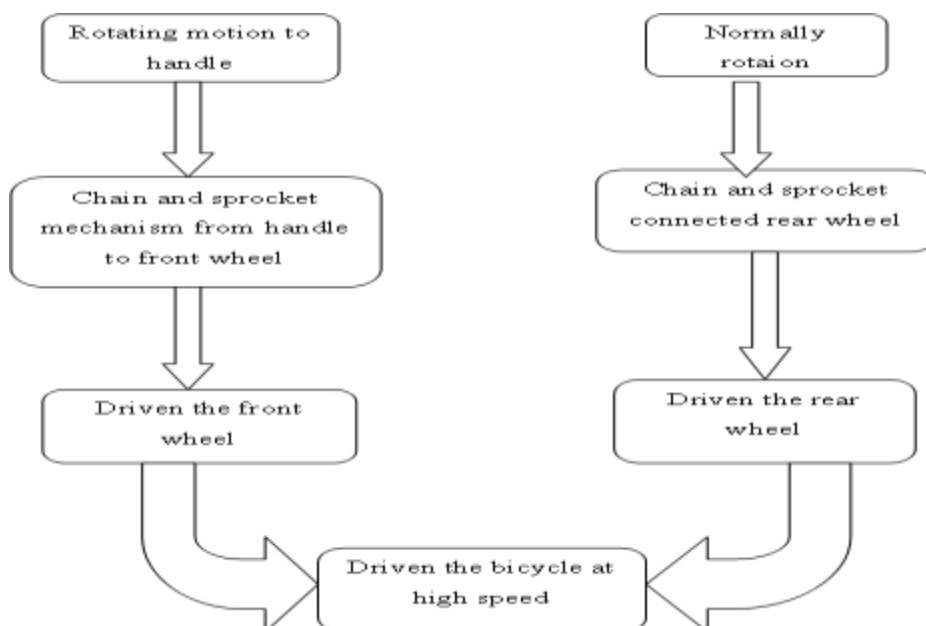
A UK study of non-exercisers who agreed to take up cycling on at least four days a week found that the greatest benefits were near the beginning of the intervention, and the more the volunteers cycled, the fitter they became. Body fat was also significantly reduced among most of those of the volunteers who were overweight or obese at the outset (59% of volunteers). The extent of the fat loss, typically two to three kilograms of fat mass over the period of the trial, meant that they should have achieved a change in energy balance, making it easier for them to control their weight while they continued to cycle.⁽⁴⁾

The study also reported attitudinal changes which included perceptions of well-being, selfconfidence and tolerance to stress, which all rose. In addition, the reporting of tiredness, difficulties with sleep and a range of medical symptoms declined.⁽⁵⁾

In a post-mortem survey of cyclists and noncyclists, large myocardial scars and blockages were found among the non-cyclists, who also had more aortic atheroma than the cyclists. The mean age of cyclists with coronary heart disease was also greater than that of the control sample, indicating that cycling may delay the onset of coronary heart disease. The findings are in keeping with the concept that regular cycling provides some protection from the development of coronary heart disease.⁽⁶⁾

Although there is little direct evidence of the specific benefits of cycling on psychological well-being, it is thought that cycling may have specific benefits due to the uniform, cyclic form of movement. This may help lead to psychophysical regulation, and reductions of the effects of stress¹⁵.⁽⁷⁾

METHODOLOGY



A TWICYCLE is a type of human-powered land vehicle powered by the legs as well as by arms.

As shown above, TWICYCLE will work in the same way that we have rotated our hand cranked handle which is connected to the chain and sprocket device next to the serial, so that when we rotate the handle, the power was transmitted to the larger to small sprocket by chain and sprocket system and cycle.

Similarly, in our normal cycle, pedal legs are circulated by the chain and sprocket system on the pedaling and power get transmitted to the rear wheels and cycle runs, so that both hands and pedal driven cycles will be twice as fast as the normal cycle.

BENIFITES

- **FULL BODY WORKOUT**

Workout the muscles on your entire body by using a combination of arm and leg crank.

- **EASIER UPHILL CLIMBS**

TWICYCLE makes climbing easier and faster as load is spread over several limbs, resulting in less fatigue and less lactic acid build-up on each individual limb.

- **LONGER RIDES**

Because you can take over with your arms when your legs get tired, you can continue going when you would normally need a break.

- **BETTER TRACTION**

Stay seated in your seat, evenly distributing weight to both wheels when going up steep hills in order to avoid loss of traction. By pedaling with both arms and legs you can avoid "wheel spin" due to slippery road conditions.

- **EXTRA POWER**

By propelling yourself forward using both legs and arms at the same time, you benefit from increased power needed for sprints. Measurements show between 300 to 450 extra watts with arms only (depending on the person).

- **TWO MACHINES IN ONE**

Get everything you normally would on a regular road bicycle and lot more. Use TWICYCLE like a regular bicycle by pedaling with your legs only. Take over with your arms to give legs a break.

FEATURES

- **CHEST PAD**

The arm cranks are lightweight and super strong, doubling as steering handles. They can achieve tight maneuvers and allow you to pedal while turning.

- **INDEPENDENT DRIVE SYSTEMS**

Chest pad provides full upper body support while cycling with arms and prevents rider from making contact with the chain ring.

- **UNISEX**

Two independently operated drive systems use free wheels, so you can coast with either one to suite your riding style and situation.

- BRAKES

Twicycle is equally suitable for both women and men.

- ARM CRANKS

Brakes are located on the handles for both front and rear braking.

CONCLUSION

Due to the restricted arm movement in normal bicycles, the speed of normal bicycles is less and as a result, they miss out on enjoying a good ride. Therefore, the introduction of the hand and pedal cycle will perform well enough to ride with increased stability and also our bicycle will perform well compared to normal bicycles. The whole body's exercises in our bicycles also show significant benefits of TWICYCLE.

REFERENCES

- {1} Andersen, L., Schnohr, P., Schroll, M. and Hein, H. (2000). All-cause mortality associated with physical activity during leisure time, work, sports, and cycling to work, *Archives of Internal Medicine*, 160, pp. 1621-1628\
- {2} Hendriksen, I. (1996). *The Effect of Commuter Cycling on Physical Performance and on Coronary Heart Disease Risk Factors*, Amsterdam: Free University
- {3} Oja P., Manttari, A., Heinonen, A, Kukkonen-Harjula, K, Laukkanen, R., Pasanen, M. and Vuori, I. (1991). Physiological Effects of Walking and Cycling to Work, *Scandinavian Journal of Medicine, Science and Sports*, Vol 1, pp 151-157 .
Vuori, I., Oja, P. and Paronen, O. (1994). Physically active commuting to work – testing its potential for exercise promotion, *Medicine and Science in Sports and Exercise*, 26(7), pp. 844-850
- {4} DETR, (1999). *Cycling for better health*, Traffic Advisory Leaflet, 12/99, London: DETR
- {5} Boyd, H., Hillman, M., Nevill, A., Pearce, A. and Tuxworth, B. (1998). Health-related effects of regular cycling on a sample of previous non-exercisers, *Resume of main findings*
- {6} Kennedy, A. (1997). Exercise and heart disease: cardiac findings in fatal cycle accidents, *British Journal of Sports Medicine*, 31(4), pp. 328-331
- {7} Froböse I. *Cycling and Health: Healthy cycling compendium*. Centre for Health German Sport University, Cologne/Wellcom. www.cyclingandhealth.com/CyclingAndHealth_e.htm
- {8} www.twicycle.com