

A SMART TREADMILL BIKE

P.Jagadeeswaran¹, K.Boopathi², K.Meiyazhagan³, S.Manikandan⁴, G.Srikanth⁵

¹Assistant Professor, ^{2,3,4,5}Final Year Students

^{1,2,3,4,5}Department of Mechanical Engineering, Sengunthar Engineering College, (Autonomous),
Tiruchengode, Namakkal Dist., Tamilnadu - 637205.

ABSTRACT:

This project work modifies a treadmill to better fit the requirements of users. Treadmill bike is designed for those humans who love to run outside. Treadmill equipped on bike frame and formulates a big innovation named 'TREADMILL BIKE'. This bike has electronic parts and runs perfectly on human momentum. As the rider walks on the treadmill, the belt butts up against the rear wheel propelling the bike forward. Treadmill bike is designed for runners as the ideal treadmill device, this device combines the best exercise running and cycling to deliver a low-impact, high performance workout outdoors. We believe it is the ideal device for healthy runners. It delivers an exercise experience that is closer to running than anything else available today.

Key Words: *Treadmill, Walking.*

I. INTRODUCTION

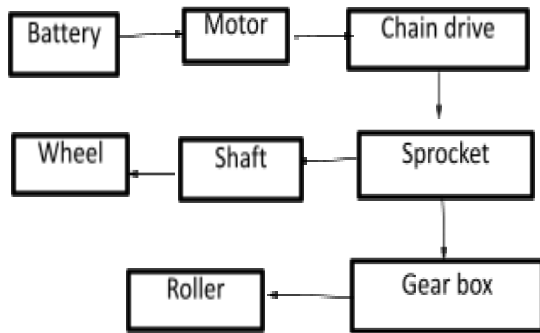
The treadmill bike is completely a new way of movement completely designed for runners. Typically using a treadmill basically is similar to running, hiking or walking. Think about the last time you were riding a bike over some kind of obstacles such as train tracks, potholes, speed bumps. Possibilities are you stood up on the pedals to improve your balance when crossing the obstacle. Basically, the treadmill bike will provide the rider a well-balanced position the entire time. It is a combination of amalgamation of DC motor with different components upgrading your walking speed to a much higher pace. Since it uses no fuel it a very conventional option for people in their busy schedule to take care of their health completely. People with a busy schedule will also be able to take care of their health and physical fitness. Above all, it is not a conventional treadmill to make use of only in closed rooms, person using treadmill bike can roam on roads also. This project overcomes the drawback of the conventional treadmill which is stationary which in fact does not provide the jogger to get exposed to the natural atmosphere. So this proposed methodology provides an ultimate solution by making use of wheels and making the

treadmill bike a walking cycle. The major elements in our project are as listed below.

II. LITERATURE SURVEY

[Kirtishbondre,2016]¹explains about the "Physical activity," "exercise," and "physical describe different concepts This fitness are three different terms that paper are confused with one another, and the terms give definitions to distinguish them. Any bodily movement produced by skeletal muscles that result in energy expenditure is known as Physical activity. The energy expenditure is measured in kilocalories. In daily life physical activity can be categorized into occupational, sports, conditioning, household, or other activities. It is a set of attributes that are either health or skill-related. The degree to which people have these attributes can be measured with specific tests.

III. BLOCK DIAGRAM



IV. COMPONENTS

a. The Treadmill



Fig.1 Frame

There are majorly two different types of treadmills having steel frames and newer and premium treadmills with Mild steel frames. Mild steel frames will hold up better if you are preparing on keeping your treadmill for several years or if you are near to the weight capacity of the treadmill. The treadmill rails (also known as bars or grips) should be used for providing stability when you are starting or stopping the treadmill or if your treadmill is well equipped with a grip heart monitor, this is where you will take your heart rate measurements. Rails are not meant to be held the complete time that you are using the treadmill, so be sure that they are in a convenient but also out of the way location.

b. Walking Belt



Fig.2 Belt

Specification:

Material : Cloth

Width : 25 cm

The walking surface of a treadmill comprises of the thin moving belt and a rigid plate held between the two surfaces of that belt so as to provide support when the transverse load of footfalls is applied. The treadmill belt size is an important characteristic in your treadmill if you are preparing for running or jogging on your treadmill. If you are planning on walking, the belt size is not of much importance. Standard belts run with size 19" wide by 47" long. Although this appears like a good width and length, you must note that the belt goes onto a deck, which includes part of the frame and your console. Again, if you are preparing on only walking on your treadmill, this size is ok. However, if you try on running you will want a wider and longer belt, since we have a capability to sway a bit while we run.

c. Rollers



Fig.3 Roller

Bike rollers are a type of bike trainer that make it feasible to ride a bike indoors without moving forward. However, dissimilar to other types of bike trainers, rollers do not confine to the bike frame, and the rider must balance him or herself on the rollers while training. Bike rollers normally comprise of three cylinders, drums, or "rollers" (two for the rear wheel and one for the front wheel), on top of which the bike runs. A belt joins one of the rear rollers to the front roller, causing the front

wheel of the bike to spin when the bike is pedaled. The spacing of bike rollers can normally be adjusted to match the bike's wheelbase. Generally, the front roller is adapted to be slightly ahead of the hub of the front wheel.

d. Bearing



Fig.4 Bearing

Specification:

Inner Dia:12mm

Outer Dia:37mm

A bearing is machine element which holds another moving machine element. The moving machine element called as a journal. Bearing allows a relative motion between the contact surfaces of the members while transferring the load. A certain amount of power is wasted in removing frictional resistance. So as to reduce frictional resistance and wear and to carry away the heat generated, a lubricant may be utilized.

V. WORKING PRINCIPLE

When we walk or run on the walking surface it gives rotation to rear wheel of bike and treadmill bike is moving forward. The walking surface of a treadmill consists of the thin moving belt and a rigid plate placed between the two surfaces of that belt in order to provide backing when the transverse load of footfalls is applied. The original and unmodified treadmill used a sheet of 0.75 inches pressed particle board as a support plate. This was attached to the frame of the treadmill at

four points with wood screws placed near the four corners of the sheet. While resting on the rails in a lowered position, the plate received vertical support from small metal risers at the mounting points and from two rubber pads placed under the longest edge of the surface midway between the hard mounting points. According to the manual provided with the treadmill, the design intent behind this flexible multi-point mounting system was to reduce the overall stiffness of the plate by providing less support than that provided by direct attachment to twosolid rails. In actual practice, the thickness and stiffness of the particle board surface were more than required to remove all discernable deflection from the system. Users were unable to distinguish the difference in stiffness when additional Mild steel supports were inserted between the sheet and the rails, in order to remove the compliant effect of the rubber supports.

We concluded that modifications would be necessary to achieve an ideally compliant walking surface capable of reducing the impact forces related with walking and running.



Fig.5 Treadmill Bike

VI. COST ESTIMATION

S.No	Description	Cost (Rs.)
1	Frame	2000.00
2	Shaft	800.00
3	Bearing	1600.00
4	Chain drive	1800.00
5	Dc motor	2200.00
6	Battery	2000.00

7	Conveyor belt and roller	1200.00
8	Total (Rs.)	14.000.00

VII. RESULTS AND DISCUSSION

- We have described a new way of travelling as well as exercise with the help of a new model of bike which is combination of treadmill bike.
- It can be used in place of regular bike at cheaper cost and without use of fuel.
- Treadmill bicycle is cheaper than the normal bike which also makes it efficient and economic.

VIII. CONCLUSIONS

This system can be efficiently used anywhere whether it is outdoor or indoor. This utilizes highly fuel-saving technology which is a major requirement of this era. In the future, it can be used as an indoor locomotive device infrastructure with large roof span i.e. malls, warehouse, open markets, large office spaces, etc. By using such product pedestrian cops can protect themselves from getting exhausted. Pedestrians in large campuses can take benefit from this product the same way. We can replace cycle as an energy efficient vehicle for those who cannot drive a cycle.

REFERENCES

- [1] KirtishBondre, SanketBeradpatil, S. J. Thorat,” Design and Fabrication of Treadmill Bike” International Journal of Innovative Research in Science,Engineering and Technology,(An ISO 3297: 2007Certified Organization),Vol. 5, Issue 6, June 2016.
- [2] SuhasineeRavindraDeshmukh,Namita Vishnu Sanap, Rahul EknathDhoble,” DESIGN OF WALKINGBIKE”,4TH International ConferenceOn Science, Technology AndManagement.(Indian International centre, New Delhi),15th may 2016.
- [3] VirendraAhire,NiravPatel,DhruvAmin,HarshalBarot,”Fabrication of walking cycle”, International bination of a new Research Journal of Engineering and Technology (IRJET), Volume: 03 Issue: 05 | May-2016.
- [4] Adeel Ansari, NomanRaza, Farooqui Sameer, Zohaib Shaikh,“Treadmill Bike” International Journal of Modern Trends in Engineering andResearch,e-ISSN No.:23499745,Date: 28-30 April, 2016.