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SYNOPSIS

1.	**Reference no: 46S_BE_2101**
2.	**Project Title: "DESIGN AND DEVELOPMENT OF LOW EFFORT RUN CYCLE"**
3.	**Name of the college: VIVEKANANDA COLLEGE OF ENGINEERING AND TECHNOLOGY, PUTTUR**
4.	**Department: Mechanical Engineering**
5.	**Name of project guide:** **1. Mr. SATHEESHA KUMAR K**
6.	**Name of the Team Members:** **1. ASHIK N** (4VP19ME005) **2. GAGANDEEP P D** (4VP19ME014) **3. SUBRAHMANYA PRASAD K** (4VP20ME408) **4. NIKSHITH V SHETTY** (4VP20ME405)
7.	**Team Leader of the Project:** **1. ASHIK N**
8.	**Keywords:** **Elliptimove, running, Low effort.**
9.	**Introduction:** The Elliptimove is an elliptical bicycle. By modifying the elliptical trainer motion and combining it with the functionality of a bicycle the Ellipticmove bicycle (Fig 1.1) delivers a high-performance workout experience that closely mimics running outdoors while eliminating the impact. It provides the most comfortable fun and efficient way to get out and stay active. ElliptiGo co-founder and former Ironman tri-athlete Bryan Pate were inspired to create the world's first elliptical bicycle after injuries plagued him to the point where he could no longer run for fitness Although he was experienced cyclist pate chose instead to use the ellipsis elliptical trainer to say fit because it was more comfortable than sitting on a bike. unsatisfied with the experience of working out in a gym however pate had a vision of creating a product that would allow him to have both the outdoor "running experience " and the low–impact

	workout of the elliptical machine. In 2005 Bryan partnered with ElliptiGo co-founder brent teal a mechanical engineer and ultra -marathoner to design and develop the world's first elliptical bicycle. Five prototypes and thousands of tests miles later the elliptical was born.

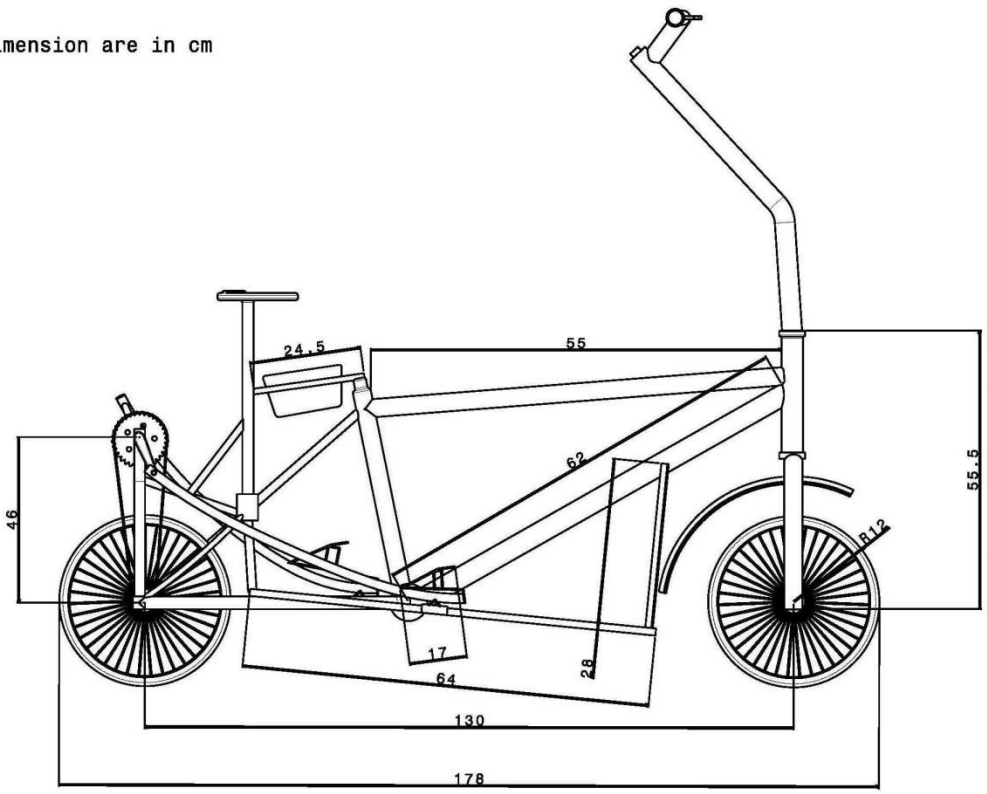
	Elliptimove is designed to be aerodynamically efficient, road bicycles have uncomfortable ergonomics. The Elliptimove is designed to emulate the natural running movement so the rider stands upright in a very comfortable position and propels the ElliptiGo using a very comfortable motion. Moreover, the most complained-about element of road biking is seat dysfunction and other urological ailments. By enabling a seatless cycling experience, the Elliptigo solves one of the most important and challenging problems facing the road bicycle industry. This project planned to design and fabricate a low-effort run cycle, which will look similar to an Elliptimove bicycle but has a driver seat.
10.	**Objectives of the project:** ❖ Provide strength to muscles by providing low-effort exercises. ❖ Compact design, little land occupancy ❖ Easy operation and reliable performance ❖ Prevent fall and fracture ❖ Reduced human effort

11.

Methodology:

Sketch:

All dimension are in cm



Materials selection:

S.NO.	Component	Material selected	Reasons
1	Frame	Mild steel	High wear resistance, high strength, good rigidity
2	Connecting rod	Low Carbon steel	Highly malleable and strong.
3	Wheel	Rubber line	Highly resilient and tear resistant.
4	Lorry hinges	Stainless steel	Limited movement.
5	Sprocket	Steel	Low cost and light weight,
6	Chain	Alloy steel	High resistance to corrosion.

12.	**Results:** **TESTING OF THE FABRICATED MODEL** To find any flaws or defects in the design or manufacturing procedures, the model was tested for various road, load, and environmental conditions after it was made. Ultimately, no flaws or defects were detected or observed. The bicycle responded well, hence obviating any danger of unbalance or accident, during testing of the model on smooth, rough, dirt, and uneven road surfaces to observe the bicycle's behavior under those particular road conditions **COMPARISON BETWEEN FABRICATED MODEL WITH OTHER MODEL** **Comparison with conventional cycle** When compared to a normal bicycle, a normal bicycle requires more pedal force (i.e. 2.75 times the rider's body weight), whereas Low effort run cycle required less pedal force (i.e. 1.5 times the rider's body weight), which is half of a normal bicycle. **Comparison with Treadmill / Exercise Machine** After comparing the force requirements in the low-effort run cycle and conventional cycle the same low-effort run cycle is compared will the treadmill/exercise machine to identify the better value-aided advantages. Usually, the treadmill is used for exercise at a particular place and the cost is also high but our low-effort run cycle is having less cost and can be used for traveling purposes as well as exercises accessory.

13.	**Conclusion:** Low effort run cycle is designed and developed, which works efficiently with less human effort while riding as well as low fabrication cost as compared to conventional bicycles and treadmills. Hence satisfying our aim of the project which was to design and fabricate the low-effort run cycle which is successfully achieved with added advantages. Low-effort move provides the rider with a workout experience while eliminating the impact on the joints of the human body caused by running, bicycling, or working on an elliptical trainer in the gym. The Low effort run cycle is particularly environmentally friendly because it uses no biological fuels. Nothing about an elliptical bicycle encourages pollution. This bicycle can be used for both exercise and short-distance travel by individuals. Setting up a specific time for their exercise is not necessary when using this cycle. The upright riding position drastically improves the rider's ability to see over traffic and obstacles as compared to road cycling.

14.	**Scope for future work:** For every fabricated model/machine a scope for future work is necessary. Because of this scope for future work lots of modifications can be done and finally, we will get optimized as well as ready to marketing model/machine can be obtained. In this regard, in this section we mention a few modification points due to this the newly fabricated machine can work efficiently with all conditions. The few modification or scopes for future works are as follows. • Increase the length of the handle so that improves the upright riding position and improves the rider's visibility level while seating. • Modification roller/slider frame for the smooth sliding of the pedal rod. • Increase the width of the cycle wheel, so that riders can achieve some balance while driving the cycle as well as give more stability to the cycle.