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Survey Paper on Intelligent Skipping Rope

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Abstract: Intelligent Skipping Rope is an advance stage of skipping rope that will be use by the people, athletes. Intelligent Skipping Rope which can measure our fat burn, heart beats, number of jumps. It has in build sensor for performing the various operations specified earlier. There will be a screen situated at one of the terminal of rope, where it will display the current result of the workout. Intelligent Skipping Rope is a great invention for the training purpose. Sports training is intended to promote health and improve skills of the sport.

Keywords: Skipping rope, sensor, pulmonary vein calculator, display screen, LED light.

I. INTRODUCTION

Now a day, human health is a wide issue over the world back. India rank 2nd place in the world in case of population. There is lots of health issue in India. Healthy body can be maintaining with physical exercise in which skipping rope is very traditional exercise. Some prefer jogging, gym. Gyms are now very advanced with the help of technology which indirectly increases monthly charges of it. A common man can't afford fees of gym for his healthy life. So they stop exercise and give invitation for various problems. But every problem has a solution.

Skipping rope is a cardio device which will be affordable to every common man. They can use it without a trainer at home which indirectly reduces expenditure. It can be use anywhere at any place at any time in the world. Training or exercise promotes a healthy and improves the skills of the sport. Now a day's anything is possible with the help of technology. With use of it and adding of my own modification I tried to design a new stage of skipping rope which is called as sensors skipping rope. It will have an in build sensors for various operations. It may be called as a technical trainer to a user. It will display the calories burnt in exercise, heart bit rate, pulse rate, counts of the skip made by it.

II. IN COMPARISON WITH PREVIOUS SYSTEMS

In olden days there was skipping rope made of cotton thread with wooden handle. After few years many changes made in rope, verity of ropes came in market, and as science is developing day by day many experiment were done on skipping rope, such as jump rope using kinetic energy , they have concentrated on the rope skipping exercise of using the equipment without a rope which is called "air jump rope". They have developed a system for recognizing the rotational motion of the rope skipping exercise. The system analyses a motion of jumping rope using the moving image processing using the IR camera of Microsoft Kinect. By attaching a polystyrene sphere to air jump rope, the system recognizes the motion of a jump rope exercise the Kinect sensor.

Another experiment was Digital Skipping Rope - Calorie and Jump Counter, The Digital Skipping Rope tracks both your jumps taken and calories burned. The timer can be programmed to countdown a set workout time or track your elapsed time.

As compare to these above systems the Intelligent Skipping Rope is advance stage of skipping rope with more features, it will contain sensor which will count heart rate, fat burnt in calories, and set of jump count, timer which count workout time. Display screen for displaying workout results.

III. WORKING

Software Requirements:

Platform - WINDOWS XP

Software - AVR,

Hardware Requirements (Minimum):

Processor - 8051uc

RAM - 512kb

Keyboard - Standard PS/2 Keyboard

Mouse - Standard Pointing Device

Display screen.

Sensor.

Handle.

Rope.

Fig. 1 skipping rope handles

An Advance Jumping Rope System project has been divided into various modules.

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They are:

1. There will be a sensors in rope to sense the pulmonary veins to sense the pulse rate, heart beat rate, blood pressure.
2. There will be a counter to count the number of jumps in each set.
3. Clock for the measurement of time span of exercise.
4. There will be a buzzer to indicate the end of set.

System analysis:-

The screen is divided into the various ratios. It will simultaneously show the heart rate, pulse rate, blood pressure, set of jumps, speed, counter, and clock. Reset will be the option to set a new exercise mode, mode is such that it will be specifying for children, medium age youth, and senior citizens. Each mode is specified with different specifications and auto guide for exercise as trainer do in gym.

Buzzer in the sensor skipping rope will give you the signal to detect your end of set. Sets can be set manually also according to need of person.

Such as: - for an athletic person the buzzer will trigger after 500 count.

For children = 25 counts
For young people = 100 counts
Senior citizens = 35 counts

At other handle, pulmonary vein counters to count pulse rate. Sensor wills response to your pulse rate and heart beat. The results will be displayed at the screen on the other hand. The communication between the sensors and the screen is managed through the wifi. At the end of each set the screen will display the result of your exercise, i.e. how much calories burnt after the exercise? What was your average of blood pressure, pulse rate, heart beat?

There will be a LED light. If you're BP, pulse rate, heart beat increases to extreme rate; it will give a indication in the blinking of light to stop your current work out. So to avoid any accident conditions related to health of athlete.

There is also an emergency button in the handle for safety precautions. If any accident happens in case if you press that button, the emergency signal will be received by an ambulance. So you will have quick access to your physical solutions within a few minutes.

Fig. 2 Palmonary Vain Calculator

Before starting the device user have to put his index finger in pulmonary vein counter and we have to hold both the handle properly. When the user will start the device, an indication will be given in terms of turning on the LED light. When the user will start his workout with the skipping rope, the sensors will sense all his body, the pulse will be calculated with the help of pulmonary counter and workout result will be displayed on a display screen provided to it.

Display screen will have four options:-

1. Athlete mode.
2. Young mode.
3. Aged mode.
4. Children mode.

Ex. If user is sport person, he will activate the athlete mode. There will be a program fixed which will set the counter for 500 skipping and declare a set.

For the end of set there is a buzzer which will give notification.

There is a modification of rest time also.

1. For an athlete mode the rest time specified is 1 minute after a set completion he/she will b having a rest tie of 1 minute before starting of a new set.
2. For young people it is 1:30 minute.
3. For aged person 3 minute.
4. For children 3:30 minute.

ADVANTAGES:-

1. Intelligent Skipping Rope displays current workout results.
2. It's very advantageous in case of weather such as in rainy season you don't have to go outside for any exercise.
3. It is affordable to a common man. Its cost is very less.
4. It is transferrable. You can take it to any place you want in your purse or baggage.
5. It's very advantageous. It exercises each muscle of body. On an average it burns 750 cal per hour.
6. Jump rope strengths both the heart and lungs and whole skeleton and your joints which reduces a risk of osteoporosis. The case of osteoporosis in India is very common which a 10 million per year is.
7. It improves agility, hand-eye co-ordination, endurance, which enhance your proficiency in whatever sports you are.

DISADVANTAGE:-

(1) It makes noise
(2) It may scratch the floor.
(3) It requires wide space not to hit someone and furniture.

IV. CONCLUSIONS

Thus with the help of modern technology such skipping rope is made. In this study, we came to know how sensors are built and mount on rope.

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Manual work of counting will be less by using such a system. It gives strength to your body, physical skill to improve agility and co-ordinations in various aspects. Most important people will get current workout result which will help them to know their body well so the system is good as a part of exercise.

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