

## HULA HOOP WITH SOUND OUTPUT

### FIELD OF THE INVENTION

The present invention relates generally to a hula hoop and in particular to a hula hoop equipped with sound output which enhances the attraction of playing the hula hoop.

### BACKGROUND OF THE INVENTION

Hula hoops have been widely played for they are fit for both the young and the old and furthermore, besides the hula hoop itself, playing hula hoop requires no additional equipment and takes only very limited space. People play hula hoop for entertainment, exercise and most likely for losing weight. Conventional hula hoops are simply a hoop to be rotated around the waist portion of human body by the player. The player has to count the number of turns by himself or herself in order to know how many turns or how long (by using an additional timer) that he or she has played. Furthermore, since conventionally, the hula hoop provides only simple rotation around the player's waist, long term playing or repeatedly playing hula hoop may become very boring and people lose interest to continue playing hula hoop.

Besides, for those attempting to lose weight by playing hula hoop, heretofore, there is no way to indicate how much energy (how many calories) has been consumed in playing the hula hoop.

Thus, it is desirable to improve the conventional hula hoop in order to overcome the problems encountered by the hula hoop players so that playing hula hoop may become a more interesting exercise.

## SUMMARY OF THE INVENTION

Therefor, an object of the present invention is to provide a hula hoop structure in which a control circuit is incorporated which counts the turns of rotation of the hula hoop and the time period that the hula hoop has been played and provides the information of turns and time to the player.

Another object of the present invention is to provide a hula hoop structure comprising a processor based circuit which, based upon the body weight and/or waistline of the player, automatically calculates and provides the information of the calorie consumed in playing the hula hoop.

A further object of the present invention is to provide a hula hoop structure which incorporates therein music playing device so that a selected rhythm may be played in playing the hula hoop which makes playing hula hoop more interesting.

Yet a further object of the present invention is to provide a hula hoop structure comprising a control circuit therein, the control circuit comprising turns-counting element and timing element for providing the information of turns of rotation of the hula hoop and the time period of playing the hula hoop, storage device being also incorporated to store the information so that a comparison may be made in the next play of the hula hoop.

To achieve the above objects, in accordance with the present invention, there is provided a hula hoop comprising a hoop body inside which a control circuit is arranged. The control circuit comprises a processor having the functions of turns counting and timing so that the number of rotation turns of the hula hoop and the time period of playing the hula hoop may be calculated and stored in a memory. Output

devices, including visual display and audio sound generator, are provided to display the counting and timing result from the processor. Switches or keys are also provided for the hula hoop player to select the desired mode of operation and to key in the player's body information, based upon which the processor may calculate the calories consumed in playing the hula hoop. Music playing device is also incorporated in the control circuit to play one or more pre-selected rhythms so that the hula hoop player may enjoy music during his or her playing the hula hoop. The speed of the music so played may be corresponding to the rotational speed of the hula hoop.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be better understood from the following description of a preferred embodiment thereof, with reference to the attached drawings, wherein:

Fig. 1 is a plan view showing a hula hoop constructed in accordance with the present invention;

Fig. 1A is an enlarged view of the circled portion 1A of Fig. 1; and

Fig. 2 is a circuit diagram showing the control circuit incorporated in the hula hoop of the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the drawings and in particular to Fig. 1, wherein a hula hoop constructed in accordance with the present invention, generally designated at 10 is shown, the hula hoop 10 of the present invention comprises a hoop body in which a control circuit (see Fig. 3) is embedded and controlled by a plurality of user accessible switches 11-14 which are

mounted on outside surface of the hoop body. The hula hoop 10 also comprises a visual display 15 which may comprise a liquid crystal display (LCD) and an audio signal generator, such as a speaker 16. A triggering switch, such as a micro-switch 17, is mounted on the hula hoop 10 at an inner side of the hoop body so that each time when the hula hoop 10 is rotated a full turn around the player's body (not shown), the micro-switch 17 is triggered once and a signal, such as a pulse, is generated.

The switches 11-14 are for player's control of the hula hoop control circuit so that the control circuit may selectively operate in accordance with any one of a plurality of operation schemes that are set up by means of the switches 11-14 which serves as user or player input device. For example, the switches 11-14 may include:

(1) a mode switch 11 which allows the hula hoop player to select one operation mode among a plurality of pre-determined modes, including regular mode, body weight mode, waistline mode, maximum number of turns mode, longest time mode and music mode, and in accordance with the present invention, the mode switch 11 is actuated in a cyclic fashion so that by repeatedly actuating the switch 11, the operation modes may be cyclically selected;

(2) an up-counting or increment switch 12, which provides an increment counting operation;

(3) a down-counting/clear or decrement/reset switch 13 which provides a decrement counting operation and a clear or reset operation; and

(4) speaker switch 14 which controls the ON/OFF state of the speaker 16 so that the player may selectively turn off the speaker.

The control circuit comprises a processor 18 which receives signals, such as pulses, from the micro-switch 17 for counting the number of turns of the rotation of the hula hoop 10 and control signals from the switches 11-14, which as mentioned above serve as player input means, to set the operation scheme for controlling the output signal supplied to the display 15 and the speaker 16. A memory 19 is connected to the processor 18 for storage of information from the processor 18. A voice synthesizing circuit 20 is connected to and controlled by the processor 18 to supply a predetermined synthesized voice signal to the speaker 16 which is in connection with and controlled by the processor 18 in order to tell the player of the turns of rotation that has been done.

In operation, the player may select the desired operation mode by means of the mode switch 11 of the player input means. For example, the regular mode is selected. In this case, each turn of rotation of the hula hoop 10 triggers the micro-switch 17 once which supplies the signal to the processor 18 and the processor 18 counts the turns. The number of turns that is counted by the processor 18 is displayed on the display 15 which is in connection with and controlled by the processor 18. The processor 18 also stores the number in the memory 19 as a comparison reference for the next play of the hula hoop 10. With such a design, the player may know if he or she is improving his or her skill of playing the hula hoop 10.

The processor 18 also functions as or incorporates therein a timer so that when the micro-switch 17 is triggered for the first time, the processor 18 measures the time period that the hula hoop 10 has been played.

The player may use the mode switch 11 to display the longest time or the maximum number of turns that one has played the hula hoop 10 by repeatedly triggering the mode switch 11 to select the longest time and/or

the maximum number of turns that are stored in the memory 19. The processor 18, once entering the longest time mode or the maximum number of turns mode, automatically retrieves the information from the memory 19 and displays the information on the display 15.

In another aspect of the present invention, the processor 18 may be programmed to broadcast a predetermined audio signal through the speaker when the number of turns of rotation reaches predetermined limits, such as 50 turns, 100 turns and so on. With such an arrangement in which the speaker 16 and/or the voice synthesizer 20 constitute an audio signal generator, the player may easily get aware of the number of turns that one has played without observing the display 15. If desired, the broadcast of the number of turns may be done in a more frequent manner and may be done with synthetic voice directly telling the current number of turns.

It should be noted that in any case when an audio signal is to be generated through the speaker 16, the signal may be processed by an amplification circuit Q first in order to obtain a desired level of the output audio signal.

By selecting the player body weight mode or the player waistline mode, the player may enter his or her body weight or waistline by using the increment switch 12 and/or the decrement/clear switch 13. In the player body weight mode or the player waistline mode, the processor 18, serving as or incorporating therein calorie calculation means, may calculate the player's body energy (for example in terms of calories) consumed in playing the hula hoop 10 based on the body weight or waistline entered by the player through the player input device and such information may be similarly told through the speaker 16 or the display 15.

The decrement/reset switch 13 also provides the function of resetting the control circuit or clearing the previous information so that the counting and calculating operation may be performed on a new basis upon the start of the next play.

In a further aspect of the present invention, the music mode allows the processor 18 which is serving as or incorporating therein music playing means, to play one or more pre-selected rhythms and the synthetic voice output adapted in the regular mode is suppressed. When the micro-switch 17 is triggered for the first time, the processor 18 plays the selected music through the speaker 16. If desired, the speed of the music that is being played may be set to be substantially corresponding to the rotational speed of the hula hoop 10. In other words, the faster the hula hoop 10 is rotated, the more quickly the music is played.

With the hula hoop so designed, the player of the hula hoop may get aware if he or she is playing better than he or she did by accessing the information (such as the number of turns and the time period that he or she plays the hula hoop) stored in the memory 19 through the processor 18. The energy (calories) consumed in playing the hula hoop 10 may also be known which is particularly good for those intending to lose weight by taking exercise. The music mode provides the player with better entertainment in playing the hula hoop and may make playing hula hoop not so boring as not to keep on playing..

Although the preferred embodiment has been described to illustrate the present invention, it is apparent that changes and modifications in the specifically described embodiment can be carried out without departing from the scope of the present invention which is intended to be limited only by the appended claims.



WHAT IS CLAIMED IS

1. A hula hoop structure comprising a hoop body and a control circuit comprising a processor-based circuit mounted inside the hoop body, the control circuit having a triggering switch which is mounted on outside surface of the hoop body and in electrical connection with the processor, the triggering switch being triggered once each time when a full turn of rotation of the hula hoop is made around body of a player and a signal being generated and applied to the processor so that counting the turns of rotation of the hula hoop is performed and information of number of turns is provided.
2. The hula hoop structure as claimed in Claim 1, wherein the processor-based circuit comprises a timer which calculate time period of playing the hula hoop and information of the time period is provided.
3. The hula hoop structure as claimed in Claim 1, wherein the control circuit comprises a visual display in connection with and controlled by the processor.
4. The hula hoop structure as claimed in Claim 3, wherein the visual display comprises a liquid crystal display mounted on the surface of the hoop body.
5. The hula hoop structure as claimed in Claim 1, wherein the control circuit comprises an audio signal generator in connection with and controlled by the control circuit.
6. The hula hoop structure as claimed in Claim 5, wherein the audio signal generator comprises a speaker mounted in the hoop body.

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7. The hula hoop structure as claimed in Claim 6, wherein the audio signal generator further comprises voice synthesizing means connected between the speaker and the processor.
8. The hula hoop structure as claimed in Claim 1, wherein the processor-based circuit comprises a memory device to store the information of the number of turns of rotation.
9. The hula hoop structure as claimed in Claim 2, wherein the processor-based circuit comprises a memory device to selectively store the information of the number of turns of rotation and the information of time period of playing.
10. The hula hoop structure as claimed in Claim 8, wherein the control circuit comprises a display to display the stored information.
11. The hula hoop structure as claimed in Claim 9, wherein the control circuit comprises a display to display the stored information.
12. The hula hoop structure as claimed in Claim 1, wherein the control circuit comprises player input means which receives player body information from a player and applies the information to the processor-based circuit which comprises calorie calculation means for calculating calories consumed in playing the hula hoop on the basis of the body information of the player.
13. The hula hoop structure as claimed in Claim 12, wherein the player body information is selected from the group consisting of body weight and waistline size.

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14. The hula hoop structure as claimed in Claim 12, wherein the control circuit comprises a display to display the calories so consumed in playing the hula hoop.
15. The hula hoop structure as claimed in Claim 1, wherein the control circuit comprises music playing means in connection with and controlled by the processor to play a pre-selected rhythm in playing the hula hoop after the triggering switch is triggered for the first time.
16. The hula hoop structure as claimed in Claim 15, wherein the music playing means comprises a speaker to broadcast the music.
17. The hula hoop structure as claimed in Claim 15, wherein the music is played at a speed corresponding to rotational speed of the hula hoop.
18. The hula hoop structure as claimed in Claim 1, wherein the triggering switch comprises a micro-switch which is actuateable each time when the micro-switch contacts the player's body.
19. The hula hoop structure as claimed in Claim 12, wherein the player input means comprises an increment switch which allows the player to increase a number input to the control circuit and a decrement switch which allows the player to decrease the number input to the control circuit.
20. The hula hoop structure as claimed in Claim 1, wherein the control circuit comprises a reset switch to reset the processor.

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