

Design of physical fitness training management system based on smart bracelet

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Abstract

With the development of modern intelligent wearable devices, this paper designs a physical fitness management system based on Smart Bracelet, which realizes the automation and intelligentization of monitoring, data recording, analysis, training plan making and so on, provides the reference for the physical ability training.

Keywords

Physical Training; Scientific Training; training efficiency.

1. Introduction

As a new kind of smart wearable device, the smart bracelet has become popular with the development of science and technology. Using the smart bracelet, users can record real-time data such as exercise, sleep, Diet and heart rate in their daily lives, thus playing the role of scientific exercise. Currently, the cost of smart bracelets is falling, and some powerful bracelets, such as the Xiaomi Bracelet, are priced in the tens of Yuan Range. Therefore, it is possible to build a physical fitness management system based on smart bracelet.

2. The advantages of the fitness training management system based on the smart bracelet the fitness training management through the smart bracelet has the following advantages:

2.1. The bracelet can guide scientific training

In general, whether aerobic training or ANAEROBIC training, in different age groups, it is necessary to reach the right heart rate in order to have a better training effect. If the heart rate is too high, it will easily lead to dizziness, nausea and other symptoms, while if the heart rate is too low, it can not play the role of improving physical strength, therefore, it is very important to control the heart rate in the training. The use of a heart rate function bracelet, real-time monitoring of the training personnel's heart rate, so that the individual to achieve the best training effect, improve training efficiency. The sleep monitoring function of the bracelet can help the training personnel adjust their work and rest reasonably and prevent the occurrence of fatigue training and other phenomena.

2.2. The wristband can improve the training efficiency

In physical fitness training, many items need to be timed and registered, which can be used to supervise and guide the participants. However, if a large number of participants were to be trained, it would be very inefficient to record each item at a time. With the recording function of the bracelet, each person's daily detailed movement data will be automatically recorded in

the bracelet, no need to arrange someone to record statistics, will greatly improve the organization efficiency of training.

2.3. The bracelet can improve the training enthusiasm

In the traditional physical training, the participants do the same training content every day, for their own ability is not a quantitative understanding, easy to tire and no motivation. But through the bracelet, the daily content can be intuitive, quantitative display out, participants can check their own training, leak fill, improve training enthusiasm.

3. Physical fitness training management system flow based on smart bracelet

On the basis of the management system of physical fitness training, considering the collection of physiological data of the participants in physical fitness training, this paper puts forward a management system of physical fitness training based on the intelligent bracelet. Currently on the market (Xiaomi or Huawei) relatively general function, the use of a Bluetooth function with the terminal synchronization of all the data bracelet. At the same time, the bracelet should be able to measure heart rate, pulse, blood pressure, step number, speed, sleep and other functions. Using the fitness training management system based on the smart bracelet, it mainly includes the following steps:

STEP1: According to the training plan generated the day before, organize the trainees to carry out the training. Use a wristband to record data during training. Use a wristband to record your sleep.

STEP2: Data synchronization is performed at the dedicated terminal when participants go to bed at night. Because of the wireless transmission character of the Bluetooth device, it only needs to be close to the terminal, and the synchronization is automatically completed.

STEP3: the system collects one-day training data and sleep data recorded by the bracelet, and automatically generates the next day's training plan according to the participants' own situation. The training program includes "personalized" content for the individual. Execute STEP1.

4. Fitness management software based on smartwatch

In order to build a fitness training management system based on Smartwatch, this paper designs a fitness management software with the following modules. The system records the raw data of each person and completes the tasks in figure 2 according to the data and the training plan template.

4.1. Personal Information Management Module

The personal information management module is primarily used for the establishment and maintenance of health records of participants, including management of basic personal information and management of physiological indicators. Physiological information includes blood pressure, pulse, Blood Lipids and other indicators that can directly reflect the health status. Physiological information is updated according to a given cycle (monthly or quarterly) or frequency, and finally a health file will be generated, will be the basis for future training programs.

4.2. Training Supervision Module

The training supervision module is mainly used to monitor the physical training, including two sub-modules: the Physical Training Standard and the subject completion. Among them, the physical fitness training is in the subject of whether the participants meet the standards, the

completion of the subject is to monitor whether the participants to complete the required content, whether there is laziness and so on.

4.3. Training intensity assessment

The training intensity assessment module is designed to correct the intensity of the training programme developed by the software so that the content development can better meet the requirements of improving physical fitness without causing excessive fatigue among participants.

4.4. Sleep quality assessment

The sleep quality assessment is used to monitor participants' sleep, to provide guidance on healthy sleep, and to develop a training plan for the next day. For the students who did not have a good rest the day before, the intensity of training can be reduced appropriately.

4.5. Capability Analysis

Based on the historical data of the trainees themselves, including the training results data and physiological data, this paper analyzes the growth of the training results, and finds out the corresponding data with the improvement of the results, so as to guide the trainees to strengthen the relevant training.

4.6. Association analysis

This analysis is based on the analysis of the physical fitness data of all participants in the system, the analysis of the reasons leading to poor training results, and comparison, thus effectively adjusting the training plan.

4.7. Training plan generation

Training plan generation is the core module of the software, and the training plan generation and recommendation system based on machine learning is proposed. It is divided into three parts: the Unified Training Plan for all participants, the individual training plan and the stage assessment plan. First of all, the system stores the detailed information of each training template, including training intensity, etc. The system can automatically select the template based on student performance to form a daily training plan and stage assessment content.

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