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Abstract
The main purpose of exercise test is to evaluate individual's physiological reaction under exercise stress, and to access one's health according to the test result. Treadmill is one of the most often used tools in the research of physiology. However, the treadmills on the market are only suitable for regular exercise to stay healthy, their specification and design is not capable of doing test for the research on physiology. In addition to lacking of EKG monitoring, doing research on physiology by using the regular treadmill, one has to adjust the speed and elevation manually according to the test procedure. It is not only difficult, but also very time-consuming and waste valuable time on researchers.

This study is to develop a programmable exercise test treadmill which can be adjusted and self-calibrated, also construct auxiliary software to monitor and record physiological parameters in experiments, and to save manpower and resource. In addition, the treadmill platform will read a file automatically that defines all movements during physiological experiments, so it has enough elasticity to implement various kinds of physiological experiments. Besides we propose a method to measure step length and step time based on treadmill speed, examinee does not dress any detecting device and it removes the distance limitation of instruments, such as traditional electronic gait cushion, also it costs less to build.
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