Development of an Automated Beep Test Machine to Count the Levels, Shuttles and VO_2 Max Level

L. M. M. De Silva[1] and P. K. N. Prasad[2]

[1]*Department of Physical Sciences and Technology, Sabaragamuwa University of Sri Lanka, Belihuloya.*
[2]*Department of Sport Sciences and Physical Education, Sabaragamuwa University of Sri Lanka, Belihuloya.*

The beep test is considered as a standardized method of measuring the maximum volume of oxygen (VO_2 max) capacity and analyzing the fitness requirements for sport. This test involves running towards and back between two lines 20 meters apart, evaluated with a pre-recorded audio which plays beep sound within a scheduled time period. During several levels, the athlete progresses up and each new level is reached when beep sound is getting faster. The point where athlete cannot reach before beep sound is considered as the level that athlete fails to complete, likewise for each athlete is given three chances to complete that level. However, even after those three chances, if they fail to reach the line before beep sound that becomes their highest score and the bleep test is finished. Currently, the beep test is conducted manually by the assistance of experienced coaches, therefore the development of automated beep test machine was carried out under this study to avoid the errors that could be made by the beep test conductor, when measuring and recording the shuttles, levels, and VO_2 max level. This machine is operated under four units namely shuttle identification unit, faults identification unit, controlling and processing unit and data analyzing unit. The detected data such as shuttles, levels, and VO_2 max level can be analyzed and transferred automatically into the database by using two shuttle identification units and one fault identification unit. A buzzer and seven segment display were connected to the controlling and processing unit to produce the beep sound and display the state of the fault of the athletes respectively. On the performances checking, the machine was able to generate a sound by the buzzer at each fault and display the status on the seven segment display. At the end of the process, the system generated the VO_2 max of the athlete according to the body weight of the athlete. When inventing this machine, the priority was given to high durability and low cost.

Keywords: Beep test, Shuttle, Athlete, Machine