

DEVELOPMENT OF MOTION RESPONSE TRAINING SYSTEM FOR BADMINTON

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BACKGROUND

This project is to implement the sports science professional to design and develop the badminton agility reaction training equipment with intelligent functions to assist players for training and monitoring.

PURPOSE

First of all, design and develop a badminton visual action reaction training system based on cross-field design, which provided agility, assistance and monitoring of the badminton footwork. Second, the design can meet the needs of domestic training, and the product has the features of wisdom and the lower cost.

METHODS

To do an evaluation test, there are totally 5 participants recruited who with more than 5 years experiences in badminton. Using simulation game mode to test, set a score of 6 hits per point, totally are 30 points, 10 seconds break between each point. The elements of the system include 6 LED lamps (3 colors), 7 photoelectric sensors, the programmable controller, human interface, tripod and different kinds of connecting lines. Use the programmable controller crystal to be a processing core written in the SFC programming language, and transmit the data through the human-machine interface which send the page to the computer for instant display, training mode, detection and data storage. The functions of system are having the ability of reaction time, action time, and training time measuring.

DISCUSSION

The results of research Phomsoupha & Laffaye (2015) pointed out that the structure of

the badminton game, singles matches are completed in 1,365 seconds. After each round, there are short preparation and 14 seconds break, and the hit frequency is 0.89 second per hit. In the terms of functions of the training system, every test for each function in operating test process is able to keep working for more than 3 hours and non-stop. Core controller and optical sensing components did not face the high temperature problem or crash condition. In other words, all related components can take when doing training.

CONCLUSION

Research team keeps doing for the further science experiment with more reliable and effective output parameters; make this training system more scientific and competitive after commercialization. The research team also plans to give an advance design for the training system, in the future, to upgrade the product, design the wireless module, and provide a cloud database. So that, the training parameters from players can through big data analysis and AI intelligence improve the training system, also better the results greatly to expand the strength for basic level of badminton in Taiwan.

KEYWORDS: Vision, Action time, Reaction time, Simulation.

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