

Replication Code and Data for: Contactless Real-time Heart Rate Predicts the Performance of Elite Athletes: Evidence from Tokyo 2020 Olympic Archery Competition

This repository contains replication code and data for the paper “Contactless Real-time Heart Rate Predicts the Performance of Elite Athletes: Evidence from Tokyo 2020 Olympic Archery Competition”.

Software Requirements

(1) STATA (code was run on STATA/SE 16.0)

- outreg2 package
- cibarc package

(2) R

- ggplot2 package
- dplyr package

Analysis Files

(1) STATA

Archery_code.do generates all the tables and figures (except Figure 1) in the main text and the supplemental material.

The code needs two packages outreg2 and cibarc. You can install them using “ssc install outreg2” and “ssc install cibarc”.

(2) R

Figure 1.r produces Figure 1 in the main text, and it uses figure1.xls generated by archery_code.do.

The code needs some R packages including ggplot2, dplyr, and other packages (mentioned in the code).

Data File

The data archery_data.xlsx is an excel file. STATA code will import it and analyze it.

The variables are as follows:

Variable	Description
matchnumber	Match ID
age	The age of the athlete
rankinground_rank	The ranking of the athlete in the ranking round match.
worldranking	The world ranking of the athlete when they attended the Olympic game.
arrows	An indicator of different arrow shooting in a set ranging from 1 to 3.
shoot_order	A dummy variable in which 1 means shoot first and 0 means shoot later in a set.

speed	The speed of the arrow and its unit is km/hour
heart_b	The HR just prior to the shooting and the unit is bpm.
strict_heart_before1 – strict_heart_before12	The recorded heart rate reading in sequence before the shooting except the heart rate just prior to the shooting. The unit is bpm.
heart_before1 – heart_before12	The recorded heart rate reading in sequence before the shooting. The unit is bpm.
score	The athlete's score in one shoot.
points	The athlete's set points in the current set.
setpoints	The athlete's total set points in the current set.
set_number	An indicator for different sets of a match ranging from 1 to 6.
name_id	Archer ID
match_name_id	Match-Archer ID
stage	An indicator for the different stages of the archery games in which 1 means 1/32 elimination, 2 means 1/16 elimination, and so on.
female	A dummy variable in which 1 means female and 0 means male.
countdown	The countdown time of the shooting.