Player Analysis Technology Approval report

WHOOP 3.0

Test code: PAT-20-025

Serial no: n/a

Software versions:
3.5.14 (iOS), 3.5.15 (Android)

Firmware version:
9.5.1.0

Issue date: 2 October 2020

Objective: To test and evaluate WHOOP 3.0 Player Analysis Technology according to Rule 31 of the 2020 Rules of Tennis.

Result: Approved

SUMMARY

The WHOOP 3.0 device (mass 20 g) containing electronic sensors is held against the wrist of the user using a strap. The sensors measure the orientation and acceleration of the arm and heart rate of the user.

Data collected by the device can be transmitted to an auxiliary device, e.g. smartphone, via Bluetooth.

Coaching information, including heart rate measurements, is available on the auxiliary device.

Restrictions on the access by a player to WHOOP 3.0 components during periods when coaching is and is not allowed are as follows:

COMPONENT	NO COACHING	COACHING
WHOOP 3.0 device	Permitted	Permitted
Auxiliary device (e.g. smartphone)	Not permitted	Permitted

MAIN COMPONENTS

The main components of the system are described in table 1 and depicted in figure 1.

COMPONENT	FUNCTION(S)
WHOOP 3.0 device (with strap)	Record motion of the user's arm and heart rate; store and transmit data
WHOOP 3.0 battery charger	Charge device
Auxiliary device (e.g. smartphone)	Transmit and communicate data
WHOOP app	Process and communicate data
WHOOP server	Store and process data
whoop.com website	Communicate data

Table 1. Description of the components of the WHOOP 3.0 system.

Figure 1. Components of the WHOOP 3.0 system (from left to right): WHOOP 3.0 device, battery pack and auxiliary device (smartphone). Images are not to scale.

DATA CAPTURE AND TRANSMISSION

A device containing electronic sensors (an accelerometer, a gyroscope, photoplethysmograms and a capacitive touch sensor) is held against the wrist of the user using a fabric strap and clasp (see figure 2). The inertial sensors measure the orientation and acceleration of the user's arm. The photoplethysmogram measures the heart rate of the user. The touch sensor detects when the device is in contact with the user's skin. The mass of the device is 20 g, including the fabric strap, and its dimensions are approximately 5 × 3 × 1 cm.

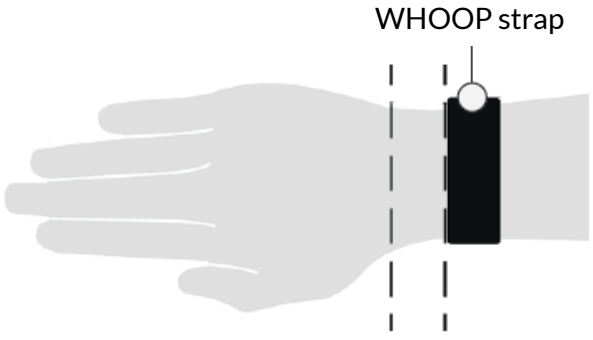

Figure 2. WHOOP 3.0 device placed on the wrist of the user.

Data can only be transferred between a paired device and a registered account in the WHOOP app. The user must log into their WHOOP account on the app (on either a smartphone or tablet) using their email address and password in order to access the data collected by the device.

The Bluetooth pairing mode is activated by tapping the device. A white LED will illuminate, indicating the device is in pairing mode (see figure 3). The device can then be paired to the user's account in the app on the auxiliary device.

Figure 3. White LED indicating pairing mode is active.

Data capture is started as soon as the device is placed on the user's wrist, and the touch sensor detects contact with the skin. Data are transmitted in real-time provided that the device is wirelessly connected to the auxiliary device via Bluetooth. If there is no Bluetooth connection at the time, the data are stored on the device until a connection with the paired device can be established. The data are encrypted both in transit and at rest.

The LED display also indicates the battery level. It does not illuminate at other times (e.g. during data collection). The device can be charged while worn on the wrist by sliding the battery pack on top of it (see figure 4).

Figure 4. Battery pack fitted to the WHOOP 3.0 for charging *in-situ*.

Data are uploaded to the WHOOP server when the auxiliary device is connected to the internet.

COMMENTS

Start/stopping data capture is player-driven. The device must be worn on the wrist to record data on the user.

Data can only be transmitted from the device to an auxiliary device, e.g. a smartphone, via Bluetooth. Data can then be transmitted from the auxiliary device to the WHOOP server via the internet.

The data are encrypted in transit and at rest, which limits the system's susceptibility to hacking.

DATA PROCESSING AND COMMUNICATION

No coaching information is available on the device. Access to data is via the WHOOP app or online dashboard (whoop.com).

Coaching information is available on an auxiliary device (e.g. smartphone). Information includes heart rate and heart rate variability, and estimated energy expenditure (kcal).

COMMENTS

No coaching information is available on the device.

Coaching information is available through the WHOOP app and website. Therefore, players must not have access to auxiliary devices with the app or internet connection when coaching is prohibited.

ADDITIONAL INFORMATION

Client:
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Date received: 7 September 2020

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Please note:
Approval does not attempt to, nor does it in fact, establish the accuracy or reliability of data or fidelity of its transmission.