



Player Analysis Technology Approval report

Forma Health Platform

Test code: PAT-25-036

Serial no: n/a

Software versions:

iOS: 0.4.29

Android: 0.1.36

Firmware version: Polar 3.0.0

Issue date: 07/08/2025



Objective: To test and evaluate Forma Health according to Rule 31 of the 2025 Rules of Tennis.

Result: Approved

SUMMARY

Forma Health is a digital platform which combines data captured from a Polar 360 wearable and user inputs to provide players and coaches with proactive strategies to minimise and prevent against injury.

The platform provides insights on player readiness and injury risk levels based on training load, recovery, and fatigue levels, recorded through a wrist worn biometric sensor. Physiological data is combined with subjective player check-ins to guide players and coaches towards strategies aiming to maintain player health and performance levels. Video capture via a smartphone allows for analysis of stroke biomechanics to support injury prevention and enhance coaching capabilities.

The app combines the data capture and processing capabilities with educational modules to guide players and coaches towards effective injury prevention, management, and treatment, with insights guided by medically supported research.

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

COMPONENT	NO COACHING	COACHING
Polar 360	Permitted	Permitted
Smartphone	Permitted	Permitted

MAIN COMPONENTS

The main components of the system are described in Table 1 and depicted in Figure 1.

Table 1: Components of the System.

COMPONENT	FUNCTION(S)
Polar 360 heart rate monitor	Capture data
Forma Health mobile app	Capture and communicate data to player or coach
Secure cloud-based data processing and storage platform.	Data processing and storage
Web platform	Data processing and communication

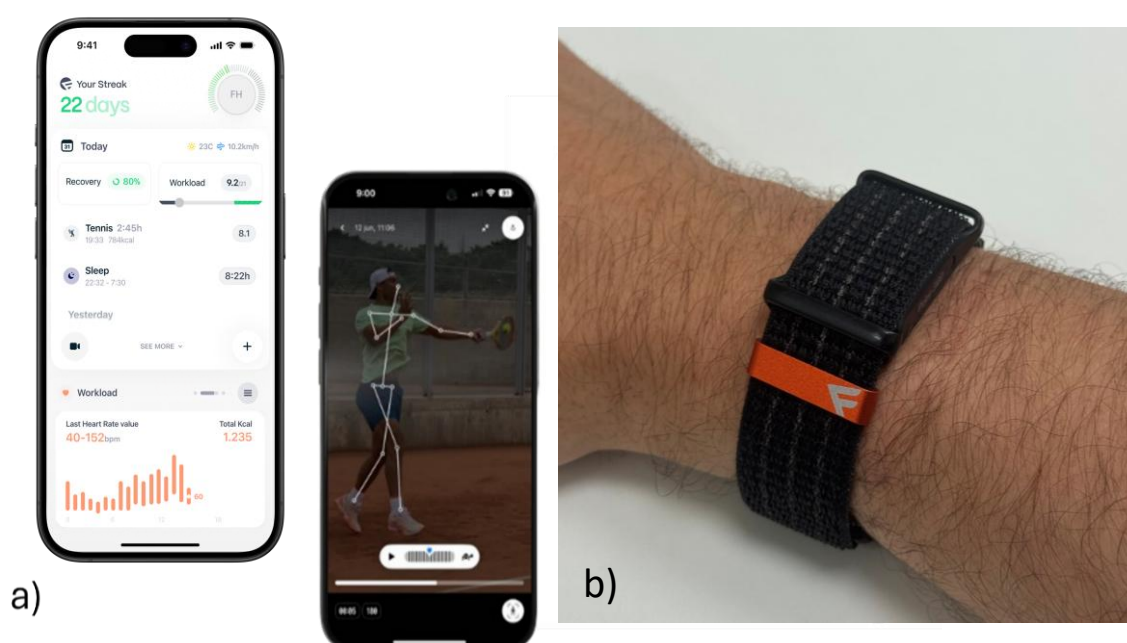


Figure 1 - Components of the System: a) the Forma Health app accessed on a smartphone and b) the Polar 360 wristband worn by the player with the distinctive orange Forma Health band.

PAT Approval of the Forma Health Platform is only valid for devices displaying the distinctive orange Forma Health band.

DATA CAPTURE AND PROCESSING

Forma Health captures data through both videos recorded through the smartphone and through the Polar 360 heart rate monitor and biometric sensor worn by the player. The Polar 360 weighs 17 g, has a battery life of up to 5 days, charged using a magnetic USB cable.

The Polar 360 device includes multiple sensors allowing continuous monitoring of physiological and activity data:

- Optical heart rate sensor
- 3D Accelerometer
- Skin temperature sensor (Skin Temp GEN 1)
- Precision Prime™ (sensor fusion technology combining multiple sensors to improve accuracy and minimise confounding effects.)

Forma combines with Polar 360 device records the following information:

Recovery Data:

- Recovery trends
- Heart rate variability (HRV)
- Breath rate
- Resting heart rate
- Skin temperature
- Sleep stages
- Sleep efficiency
- Sleep goal

Workload data:

- Heart rate (HR)
- Workload from workouts
- Workload from everyday activity
- Session duration
- Time in heart rate zones 1-5
- Estimated calories burned per session
- Daily steps
- Stress (measured through the rate of recovery in relation to HR peaks)
- Intensity of exercise (workload per minute, with workload calculated through HR)
- Recovery Speed (measured through the rate of HR reduction following intense peaks)

Through the Forma Health app, players have the option to provide the following additional information to develop a more accurate recommendations in combination with the biometric information collected by the Polar 360:

- Subjective wellness check-in
- Pain reporting
- Habits
- Track menstrual cycle for female players

Video data collected through the smartphone camera is used to provide biomechanical analysis to players and coaches. A 120-fps smartphone camera is recommended, but is not mandatory. Video data is attached to the workout, where it can be accessed by player and coach (if shared) during and after the workout. Automated joint tracking enables further biomechanical analysis through multiple frames, investigating variables such as joint angles.

The *Forma Score* metric is independently processed for each user. The platform has been registered as a medical device in Spain, such that recommended actions can be provided, though it should not be used as a diagnostic tool.

If pains are flagged, the user is guided by the app to locate the origin of the pain and to record when said pain is felt, through a series of questions. Recommended actions are provided, including video walkthroughs of physio exercises, and indications as to whether the player should stop playing as a result of the pain. This detail is integral to the app and is built on the medical experience of doctors with a wealth of experience, specialising in tennis injuries. Educational content regarding nutrition and mental health support is also available.

The app prompts investigations into differences and correlations between subjective and objective data, giving users the opportunity to delve deeper into reasons why recovery could be poor.

COMMENTS

Video data is available on the smartphone locally after recording, where it can be analysed. It is uploaded to the cloud and linked to the session to be viewed and analysed by other users with access. The accuracy of data inputted into the app is reliant on the player and their subjective measurements.

Data is transmitted from the Polar 360 device to the smartphone app via a Bluetooth Low Energy (BLE) connection, paired through security protocols designed as part of the Polar systems; all transmitted data is encrypted through Transport Layer Security (TLS) ensuring only the intended receiving device can read data transmitted.

Forma health connects to either Apple Health or Google Health Connect (based on phone operating system) to manage and store data. Users can opt in to all data sharing, but sharing of heart rate data is mandatory for the application to function.

The user is asked to start each exercise session using the app. If the user forgets, the app automatically starts a session when the user's heart rate exceeds certain levels of intensity, based on player's individual data. If a user forgets to start a session, they can add the session manually using the app afterwards, where then the data will be taken from the Polar 360 device and analysed.

Open Authorisation (OAuth) protocol is used to control data access to data for players and coaches, ensuring only authorised users have access to the data collected and generated.

All cloud storage data is encrypted. All data used for aggregated analysis and comparison is anonymised. The Forma Health app is GDPR-compliant with data handling and privacy policies in place.

DATA COMMUNICATION

Data is accessed by players and coaches through the mobile app and web platform available. The mobile app allows players to access real-time and historical data collected, combines with the *Forma Score*, recovery trends, and video. The web platform allows for authorised coaches and support teams to access aggregated data.



Figure 2 - the *Forma Score* metric as displayed in the app.

The *Forma Score* is a measure of an athlete's state of body. The variables and parameters recorded combine the workload and recovery data to produce the metric, which indicates whether the player is capable of training further, or whether a player is at risk of injury. The aim is to stay in the optimal zone.

OAuth-based authorisation protocols ensure that only authorised data is shared to authorised users, such as coaches and support staff. Players have access to their own biometric, workload, and wellness data, and can determine which data is to be shared with authorised coaches and/or academies. Access to any data can be given or removed by the player at any time. The player has total control over the level of access that linked coaches or academies have to their data. Coaches have access to certain data that the player has agreed to share. Key metrics such as heart rate, heart rate zone, and workout time can be shown in a widget on the lock screen of a player's device during an activity. Table 2 details how data access and timings vary between data types.

The coach and player have different levels of access based on their role. The coaching role allows a coach to view the shared data of each of their players individually, and the player app shows all the player's individual metrics, allowing also for subjective data collection. A web dashboard is also available. Academies view the data separately, showing multiple coaching groups. A coach will invite the player to their coaching group via a QR code, which gives a player access to the app, and links them to that coaching group.

Video walkthroughs of physio exercises are integrated into the app, to be used for injury prevention and management.

Table 2 - Timing and access to types of data generated.

Data Type	Available When	Accessible Through
Biometric Data	Real-time & post-session	Mobile app, Web dashboard
Wellness Check-ins	Immediately after input	Mobile app, Web Dashboard
Video Recordings	Post-recording (local device) Post-session (cloud)	Mobile app
Forma Score	Continuously updated	Mobile app, Web Dashboard
Historical Trends	On demand	Mobile app, Web dashboard

COMMENTS

Video data is stored locally on the device and uploaded to the cloud. Joint detection occurs on the device. Analysis is possible on the recording phone during the session immediately after recording.

If a player changes their coach, and removes them from their profile, the player will no longer appear in the coach's view and the coach will no longer have access to the player's data.

There is no haptic feedback function to the Polar 360 wristband.

ADDITIONAL INFORMATION

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15/05/2025

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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.