

POLAR HRM FOR HORSE AND RIDER

Real-time Heart Rate Monitoring App for Horse and Rider



OVERVIEW

- ❑ App tracks and displays real-time HR data from two Polar sensors simultaneously.
- ❑ Enables riders to monitor horse and own HR during rides, with post-ride analysis.
- ❑ Add environmental information through APIs



TARGET USER

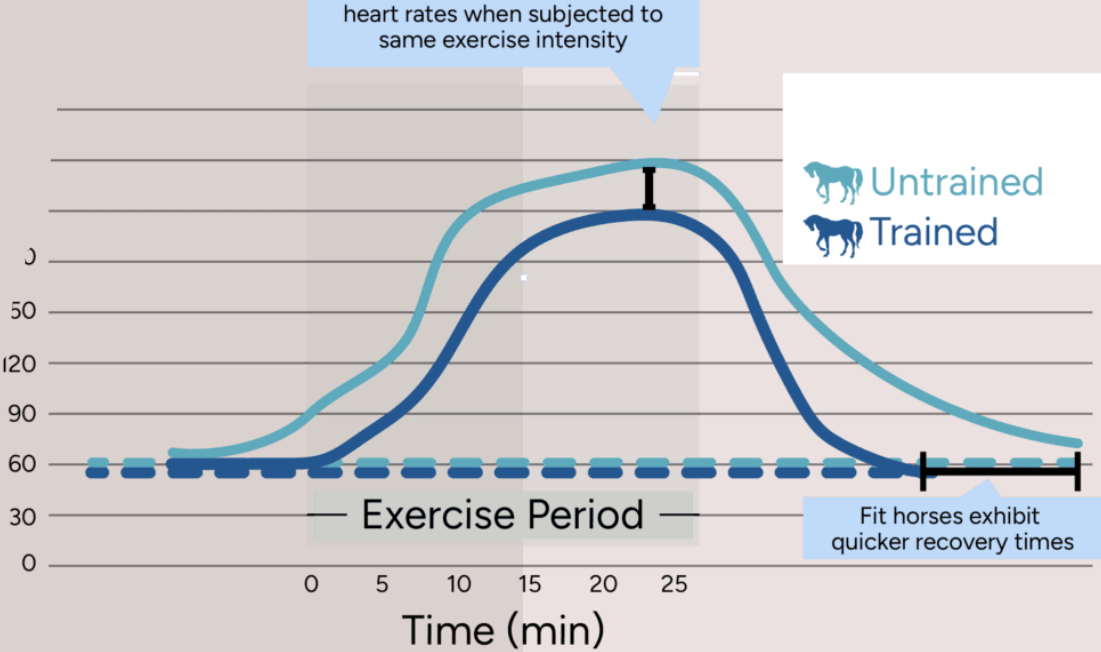
- ❑ Primarily competition riders but suitable for all equestrian enthusiasts.
- ❑ Horses are athletes requiring well-structured training regimes.
- ❑ Insights offered:
 - ⇒ Endurance => Greater speed for longer distances
 - ⇒ Recovery time (endurance)
 - ⇒ Heart Rate (fatigue)
 - ⇒ Gate/ Injuries
- ❑ Equine sports such as show jumping, eventing, dressage, endurance racing would all benefit from horses and riders increased stamina.

Potential spinoff: Applications in team sports (e.g., rowing, cycling) to monitor teammate HR and inform strategies.



PROBLEM STATEMENT

- ❑ Existing apps use Polar technology to track HR for riders or horses but lack simultaneous monitoring for both.
 - Riders are genuinely interested in this feature.
- ❑ Limited awareness among riders about HR monitoring for horses.
- ❑ App integrates:
 - Historical training stats for cross-referencing with injuries or conditions.
 - HR zone guidelines for horses.



(Very Light)	< 140 bpm	Aerobic	and active recovery. Recommended for warm-ups, horses entering work or horses recovering from injury.	Walk & Trot
Zone 2 (Light)	>140 – 160 bpm	Aerobic	Improves basic endurance and helps prepare for higher-intensity exercise. Recommended for longer, low-intensity endurance training.	Walk, trots and slow canters
Zone 3 (Moderate)	160 – 170 bpm	Aerobic	Improves muscle strength and builds the ability to sustain moderate exercise for longer periods of time.	Quick canter intervals mixed with longer trots. Moderate hill work or jump training
Zone 4 (High)	170 – 190 bpm	Anaerobic	Improves endurance at higher speeds and increases the capacity of muscles to burn energy without oxygen.	Intervals of fast canters and gallops. Moderate hill work
Zone 5 (Very High)	> 190 bpm	Anaerobic	Improves strength and stamina – the	



TECHNICAL APPROACH

- ❑ Development Process
 - Iterative trial-and-error approach to refine functionality.
 - Researched rider needs and gaps in existing solutions.
- ❑ App architecture
 - MVVM
 - Models: Polar Data & Air Quality Data
 - View Models: PolarView Model & Dual Monitor Manager
 - Views: Polar & Combined heart rate chart
 - Key Services
 - Polar Service: BLE dual communication.
 - Location Manager: access and tracks device location
 - Air Quality: API integration



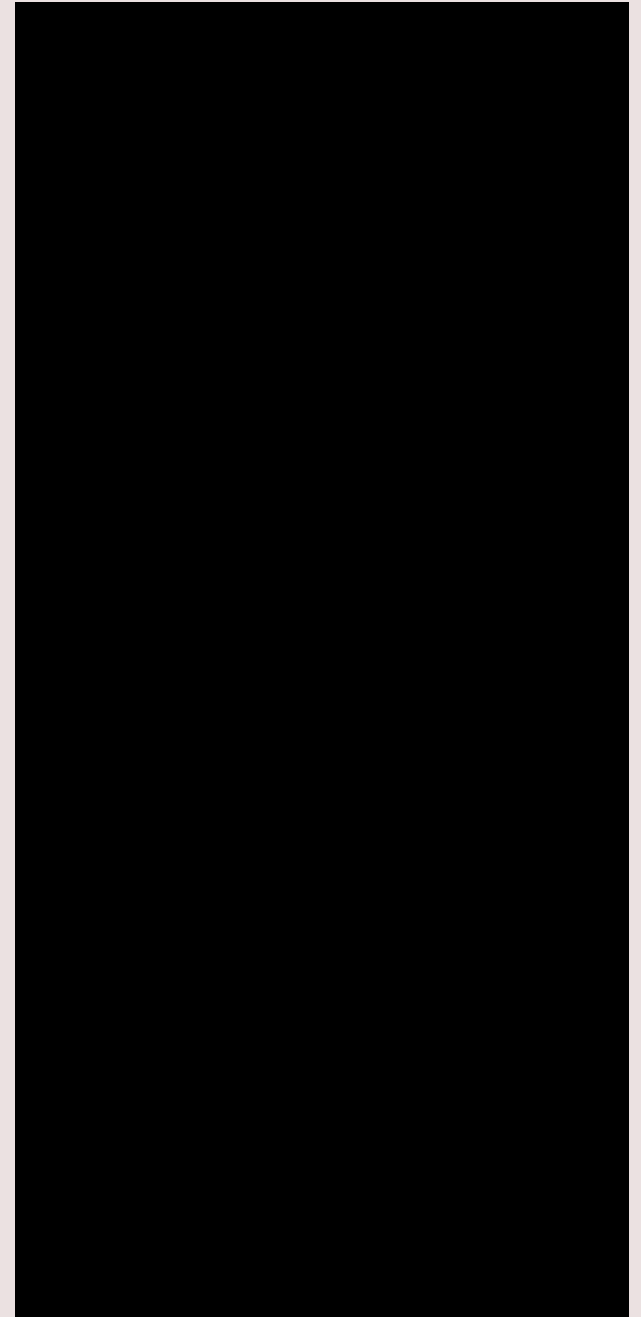


USER INTERACTION

- ❑ Gear up horse and rider with Polar trackers.
- ❑ Open the app on the rider's phone.
- ❑ Confirm live air quality display.
- ❑ Connect Polar sensors for both horse and rider to the app.
- ❑ Start measurement when ready to begin training or competition.
- ❑ Ride as normal and stop measurement at session's end.
- ❑ Post-session:
 - Access saved data for analysis.
 - Cross-reference HR data with conditions (weather, air quality, etc.).
- ❑ Designed for efficiency and simplicity to meet competition stable needs.

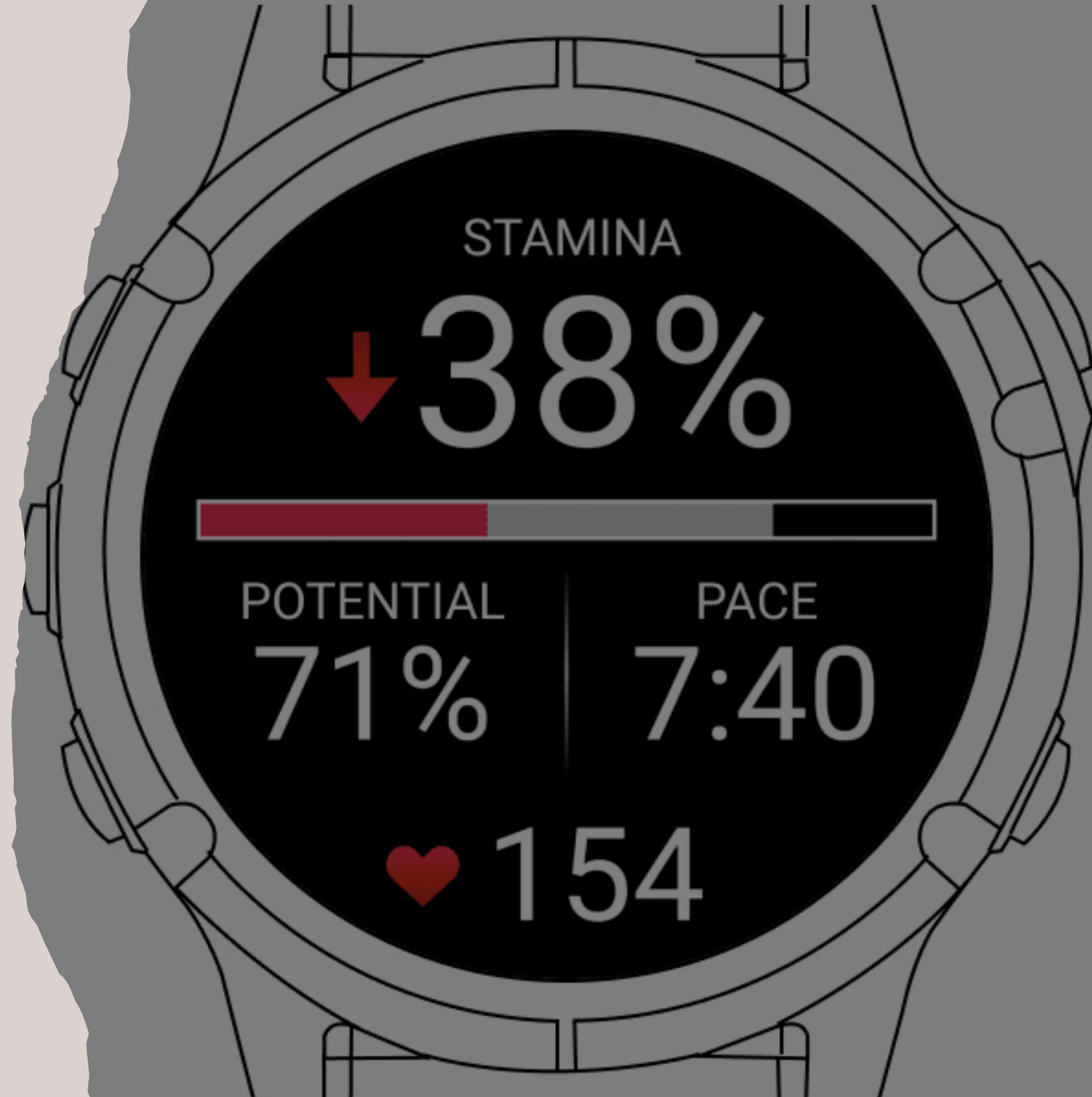
RESULTS

- ❑ Seamless Polar sensor connection.
- ❑ Clear and straightforward HR visualization:
 - Real-time graphs and BPM data.
 - Saved stats for post-ride review.
- ❑ Bonus feature: Air quality monitoring linked to location.



FUTURE WORK

- ✓ Develop smartwatch version.
- ✓ Add detailed profiles for horses.
- ✓ Integrate rider data with other health apps.
- ✓ Include additional metrics:
 - Location and speed tracking.
 - Temperature data.
 - Specialized horse training guidelines.
- ✓ Expand to team sports involving dual-user scenarios.





THANK YOU!

Resources

- 1. Polar, “Horse heart rate sensors,” [Online]. Available: <https://www.polar.com/sv/horse-heart-rate-sensors>. [Accessed: Nov. 08, 2024].
- 3. Mad Barn, “Heart rate monitors for horses,” [Online]. Available: <https://madbarn.com/heart-rate-monitors-for-horses/>. [Accessed: Nov. 08, 2024].

