Hydrosense – Device & App Overview (App Store Submission Note)

App Name: Hydrosense

Category: Health & Fitness

Hardware: Hydrosense Sweat Patch (non-digital, passive wearable)

Connection: No wireless connection; users manually input readings into the app.

Intended Use: For **fitness and wellness tracking only** – *not a medical device.*

🛡️ Purpose and Safety Statement

Hydrosense is designed as a **fitness and wellness monitoring tool** to help users track **sweat rate and sweat loss** during physical activity. It **does not provide medical advice, diagnosis, or treatment**, nor is it intended for clinical or diagnostic use.

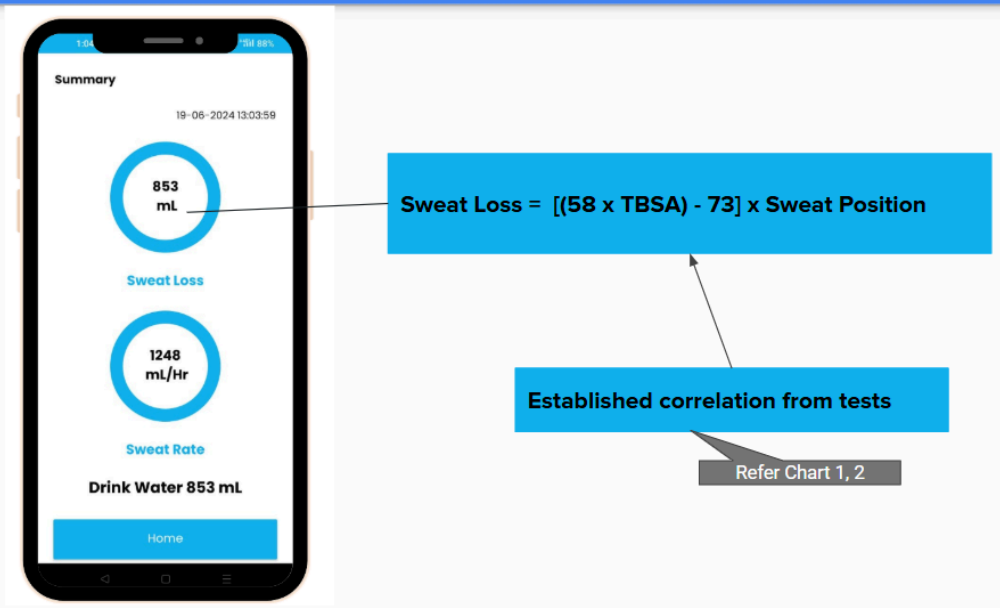
App Functionality Summary

- **No physical or wireless connection** exists between the Hydrosense patch and the app.
- Users **manually input patch readings** to receive hydration trend insights.
- The app uses a proprietary algorithm to **visualize hydration-related fitness patterns**.
- Data displayed is for **awareness and personal fitness optimization only**.

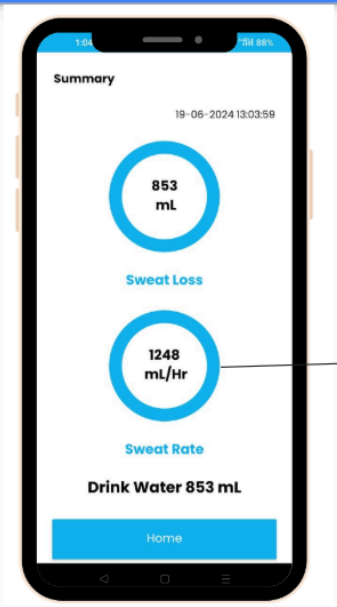
Hydrosense App Algorithm

Flow Chart for Predicting Sweat Loss

Calculating Sweat Loss Fluid Intake

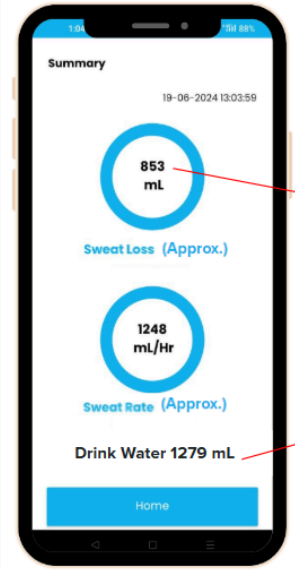


Calculating Sweat Rate Fluid Intake



Sweat Rate = (Sweat Loss/ Time (min)) x 60

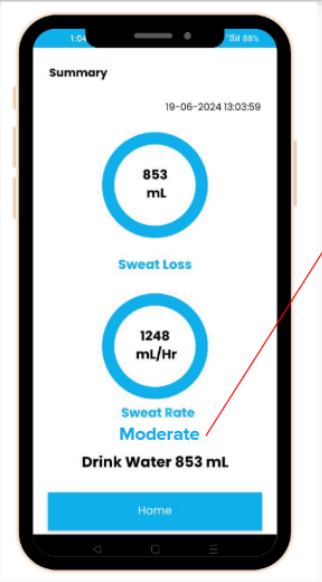
Recommending Fluid Intake



Ref: Casa, D. J., et al. (2000). *National Athletic Trainers' Association Position Statement: Fluid Replacement for Athletes.*

Multiply Sweat Loss by 1.5x to Show Drink Water value (Ex. 853x1.5 = 1279)

Deciding Low, Moderate, High, Very High Sweat Rate



If the value is between 0 - 1000 mL/Hr Show “Low”

If the value is between 1000 - 1500 mL/Hr Show “Moderate”

If the value is between 1500 - 2000 mL/Hr Show “High”

If the value is Above 2000 mL/Hr Show “Very High”

Table 1: Sweat Loss Error

Test	Weight (Kgs)	Height (CM)	TBSA	Exercise Time (Minutes)	Type of Exercise	Sweat Loss (mL) (Body- Mass Change Method)	Sweat Loss (mL) (by Our Device and App)	Absolute Percentage Error
1	51	160	1.51	30	Indoor Cycling	490	510	4.1
2	51	160	1.51	45	Indoor Cycling	650	597	8.2
3	56	164	1.60	50	Indoor Cycling	690	672	2.6
4	51	160	1.51	50	Indoor Cycling	680	699	2.8
5	55	164	1.59	50	Outdoor Running	970	941	3.0
6	51	160	1.51	30	Indoor Cycling	430	233	45.8
7	54	164	1.58	45	Outdoor Cycling	320	279	12.8
8	51	160	1.51	45	Indoor Cycling	400	198	50.5
9	63	165	1.69	60	Outdoor Running	1500	1251	19.9

The patch showed an accuracy rate of 83.4% in detecting sweat loss based on above data

Chart 1: Sweat Rate Correlation

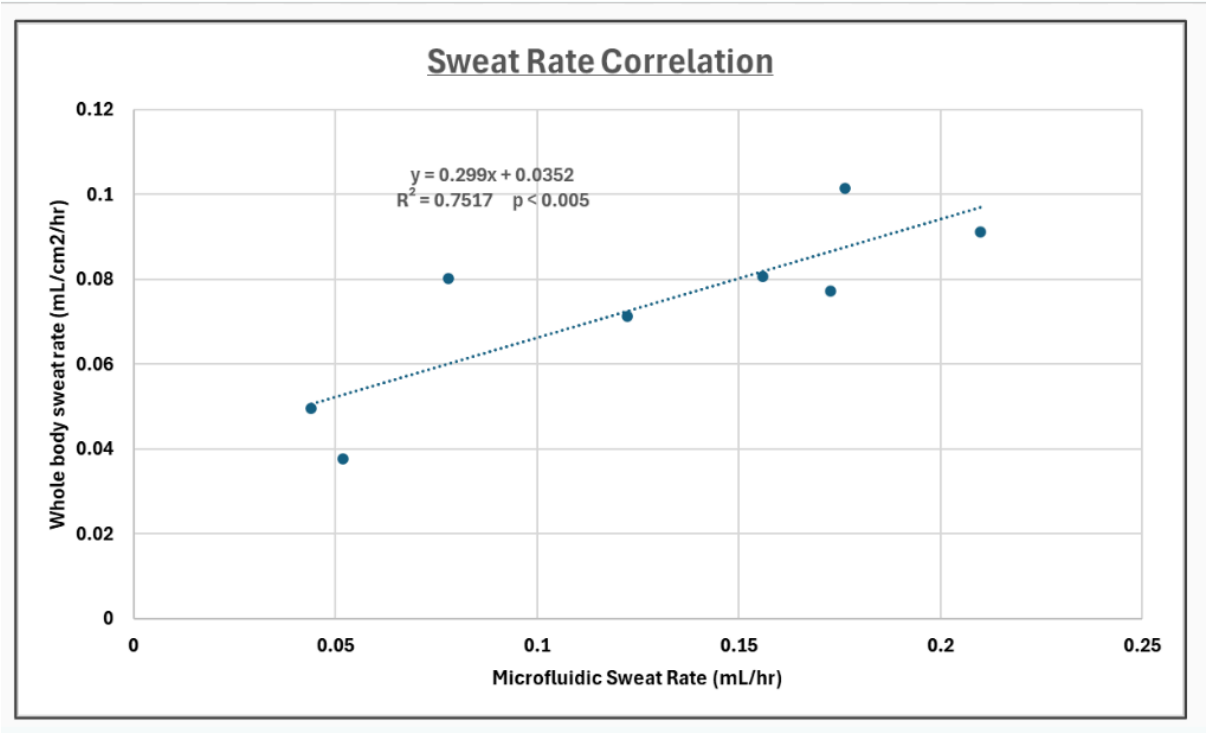
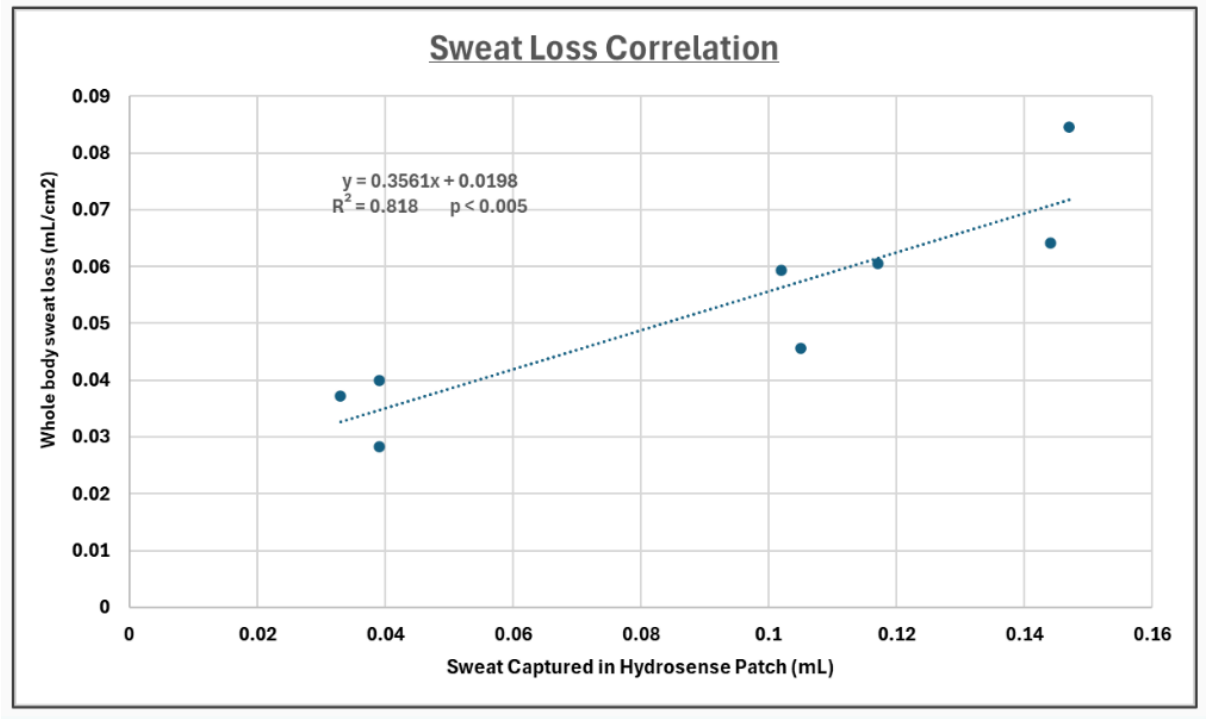


Chart 2: Sweat Loss Correlation



Sweat loss and sweat rate calculations in Hydrosense are based on established methods from leading sports science research:

1. Casa, D. J., et al. (2000). *National Athletic Trainers' Association Position Statement: Fluid Replacement for Athletes*.
   Journal of Athletic Training, 35(2), 212–224.
   ➤ Foundation for hydration strategies and sweat rate monitoring during exercise.

2. Sawka, M. N., et al. (2007). *Exercise and Fluid Replacement*.
   Medicine & Science in Sports & Exercise, 39(2), 377–390. (ACSM Position Stand)
   ➤ Guidelines for calculating sweat loss and adjusting for environmental and physiological variables.

3. Maughan, R. J., Shirreffs, S. M., & Leiper, J. B. (2007). *Errors in the estimation of hydration status from changes in body mass*.
   Journal of Sports Sciences, 25(7), 797–804.
   ➤ Highlights errors in sweat loss estimation due to unmeasured variables.

4. Cheuvront, S. N., Haymes, E. M., & Sawka, M. N. (2002). *Comparison of sweat loss estimates for women during prolonged high-intensity running*.
   Medicine & Science in Sports & Exercise, 34(8), 1344–1350.
   ➤ Discusses over/underestimation of sweat loss from trapped sweat and metabolic/respiratory losses.

5. Armstrong, L. E. (2007). *Assessing hydration status: the elusive gold standard*.
   Journal of the American College of Nutrition, 26(sup5), 575S–584S.
   ➤ Mass balance approach as a standard proxy for hydration monitoring.

6. Mitchell, J. W., Nadel, E. R., & Stolwijk, J. A. J. (1972). *Respiratory weight losses during exercise*.
   Journal of Applied Physiology, 32(4), 474–476.
   ➤ Provides equations to account for respiratory water loss during physical activity.

7. **Biocompatibility Reference:**
   Biocompatibility testing for **3M™ Medical Tape 1577** was conducted per **ISO 10993** standards.
   ➤ Refer to the 3M Technical Data Sheet

Disclaimers (Shown In-App)

Hydrosense is not a medical device.
It is intended for **recreational,wellness & fitness use only**. Not applicable for Medical Diagnosis. Please consult a healthcare provider for any medical concerns.
