

MX3

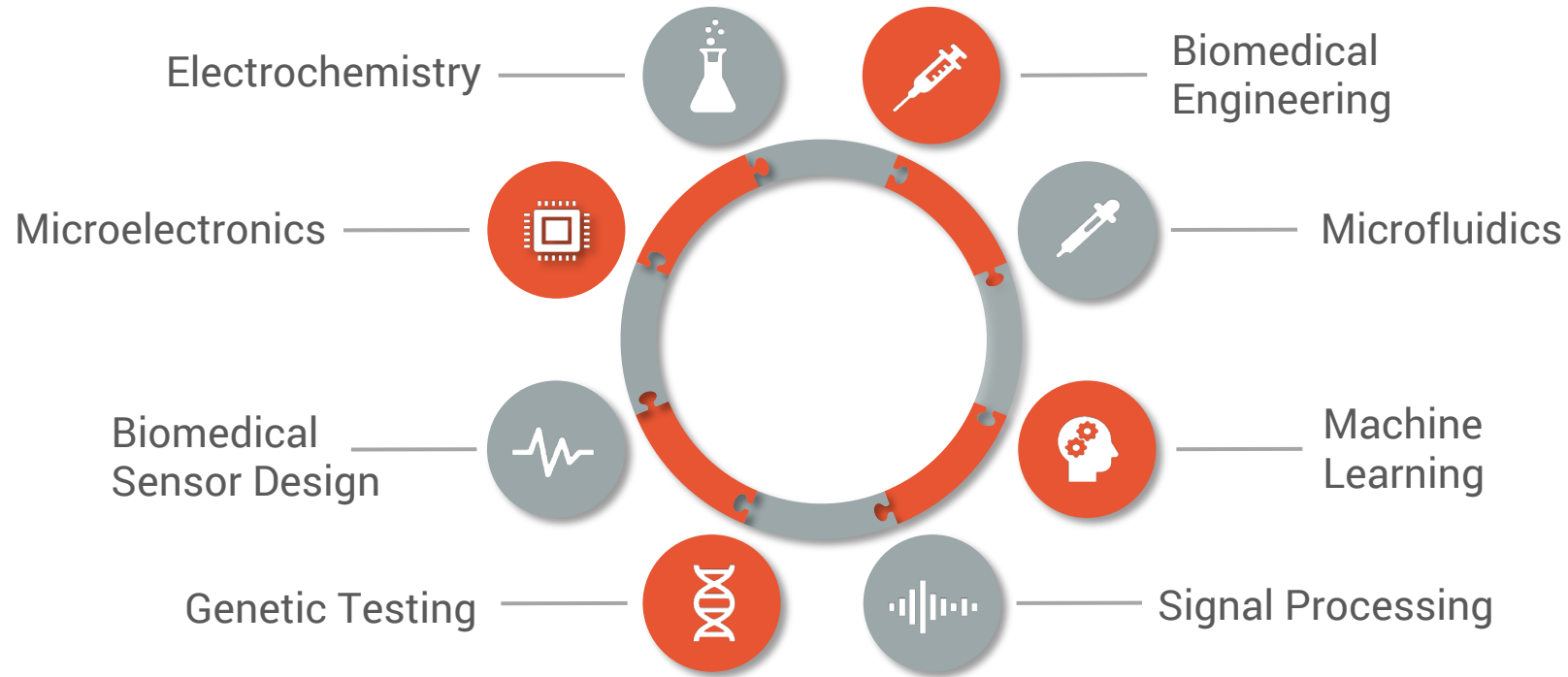
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goSafe

Introducing the **first**  
**ever**, real-time  
hydration test.



# COMPANY PROFILE & VISION



*“Enabling rapid, LAB grade testing for health and performance”*

# PROBLEM

Individuals under heat stress conditions are **4X more likely** to experience occupational heat strain.



**15%**

Of the workforce suffer from kidney disease or acute kidney injury

**30%**

Of the workforce report productivity losses



**35%**

Of the workforce experience occupational heat strain





# HEAT STRESS IS SERIOUS

*National Emphasis Program (NEP)  
Outdoor and Indoor Heat Related Hazards*

*- US Labor Department April 2022*

**\$2.4 Trillion by 2030**

Predicted global cost from lost worktime

**18 of last 19 summers** hottest on record  
*OSHA NEP*

**384 heat-related deaths** over the last  
decade. *US Dept of Labor stats*



*“Reducing workplace heat-related illnesses and injuries is a  
top priority for the Department of Labor”*

*- OSHA National News Release, April 12, 2022 -*

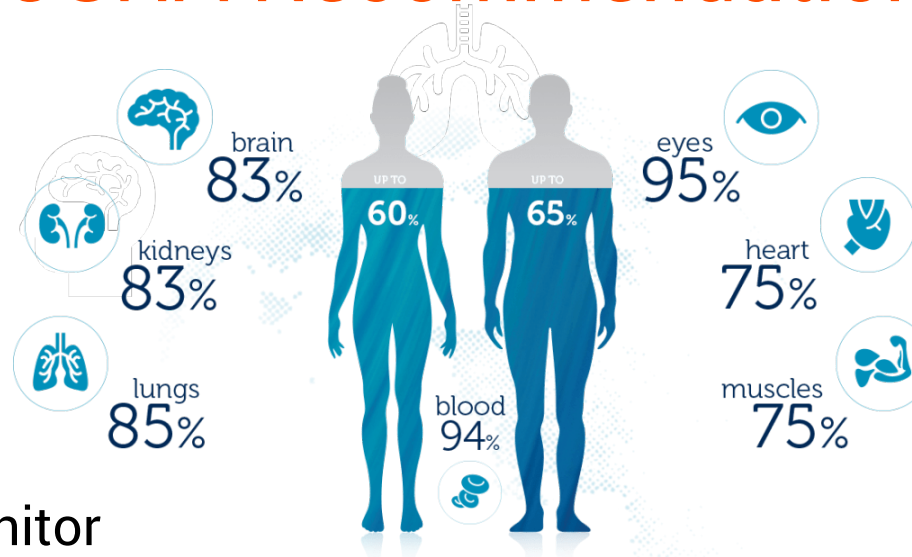


# PREVENTING HEAT STRESS

## OSHA Recommendations

### Heat Illness Prevention

- Provide training
- Easy access to cool water
- Acclimatization
- Provide cool shaded area
- Designate a responsible Monitor



*#1 way to prevent heat stress is to keep workers hydrated.*

- Provide water
- Remind workers to hydrate
- Provide shade
- Water breaks

## *Why Monitor & Test Hydration?*

*Identifying workers who are Dehydrated*

# HYDRATION & WORKER PERFORMANCE

Respiration



Cardiac



Cognition



Strength and  
Endurance



Preventing  
Injury



## THE BENEFITS

Optimal hydration is essential for maintaining peak physical condition, including:

1-2% Body Mass Loss Reduces *COGNITION, TASK PERFORMANCE, REACTION TIME, SHORT TERM MEMORY, and MOOD STATE*

# WATER AVAILABILITY

Having drinking water available  
doesn't mean workers will drink



78 percent of associates suffering  
from heat illness were dehydrated—  
despite having drinking water  
available

*State of California*

Over 75% of workers show up  
moderately dehydrated or worse

*How can safety managers monitor hydration status*



# TRACKING HYDRATION: FLUID LOSS

*Tracking and monitoring hydration is a challenge, current methods include:*



## Lab-based Testing

Blood Plasma, Isotope Dilution

- Invasive
- Complex
- Expensive

For workplace environments, results need to be fast and labs won't work.



## Urine Specific Gravity (USG)

Only reliable under strict protocols

- Proven Unreliable for Spot Checks
- Gross & Unpleasant to Handle
- Very Invasive

Has been shown NOT to be a good indicator of exertion related dehydration



## Pee Color Charts

Better than nothing but

- More unreliable than USG
- Left up to the Worker's Discretion
- Hard to Document or Record

To monitor dehydration effectively managers should record results for historical tracking

# SALIVARY OSMOLARITY (SOSM)

CONCENTRATION OF PARTICLES –  
PREDOMINANTLY ELECTROLYTES IN SALIVA



Salivary osmolarity is a proven method for hydration testing but **not very functional**

**Past (up to \$25,000)**

*Advanced Instruments Model 3320 Osmometer*



With the **first portable salivary osmolarity testing system**, we make this test practical

**Present (\$1,000)**

*MX3 Hydration Testing System*



FDA LISTED

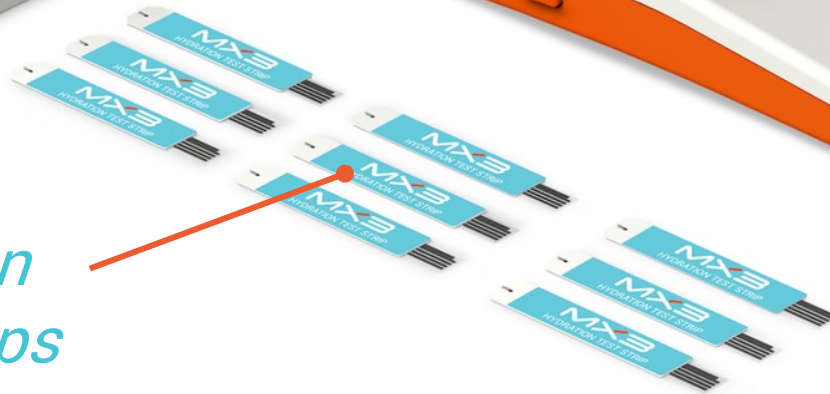


# THE MX3 HYDRATION TESTING SYSTEM

*MX3  
Dispenser*



*Hydration  
Test Strips*



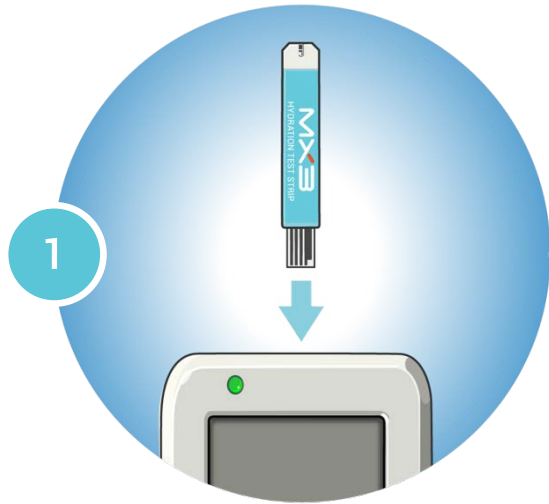
*MX3 App  
and Portal*



*MX3 LAB*



# HOW TO TAKE A HYDRATION TEST



**1**  
Insert disposable test strip into device

The entire test takes approximately 25 seconds from start to finish



**2**  
Take a sample anytime, anywhere

Saliva is collected from the tongue and measurement is initiated within 5 seconds



**3**  
Immediate Results

Stored in user's profile within Admin's MX3 App and cloud-based database



**4**  
Tracking, Alerts and Analytics

Helping Supervisors, HSE and Site managers develop risk mitigation strategies

# INTERPRETING RESULTS



HYDRATED

<65



MILDLY  
DEHYDRATED

66-100



MODERATELY  
DEHYDRATED

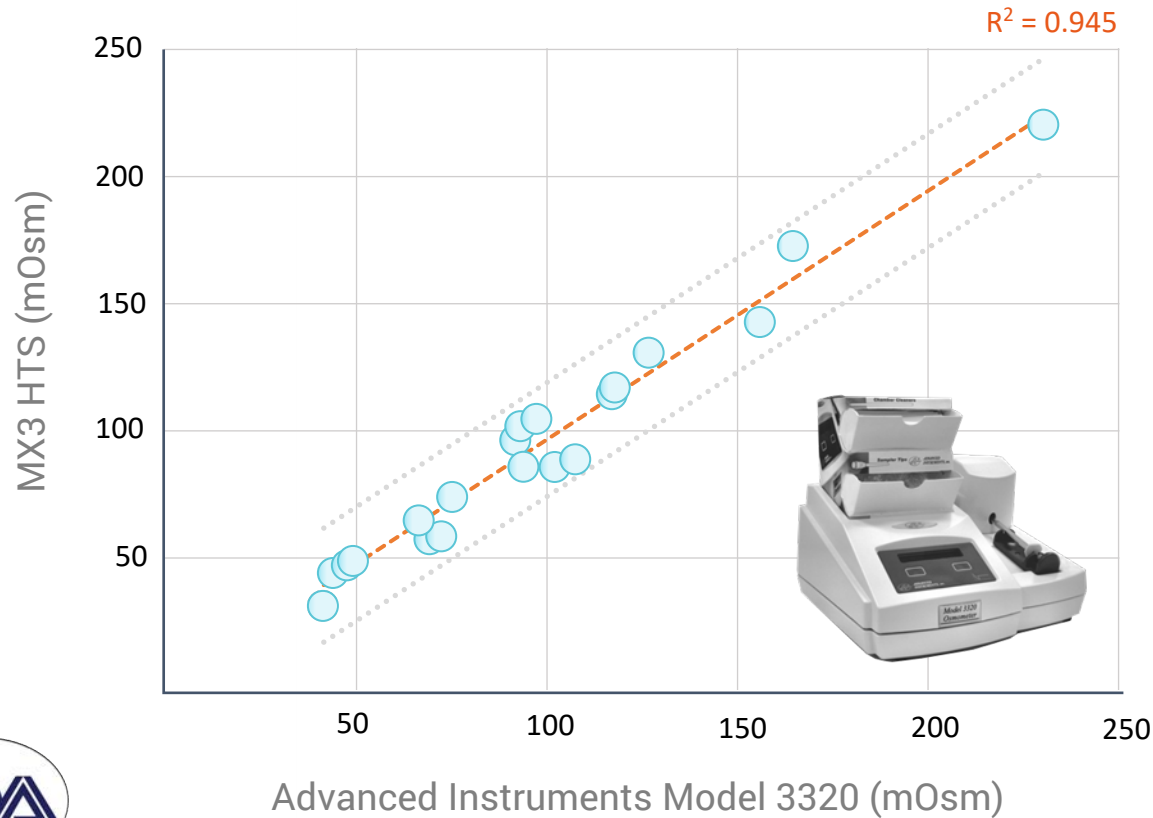
101-150



SEVERELY  
DEHYDRATED

150 +

# SOSM TEST STRIP: VALIDATION



FDA Listed for Hydration Assessment via Salivary Osmolarity



U.S. AIR FORCE

MX3 test data compared to FDA-approved commercial osmometer

**CONCLUSION: Very accurate**

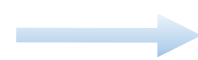
( $R^2 = 0.945$ )

*Tests conducted by the USAF*

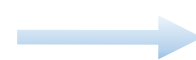


# TEAM HYDRATION TRACKING: SOSM

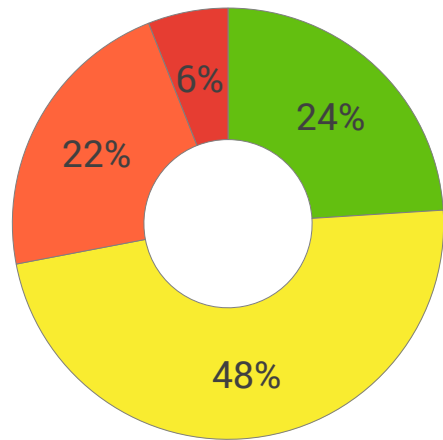
Identify Dehydrated Personnel



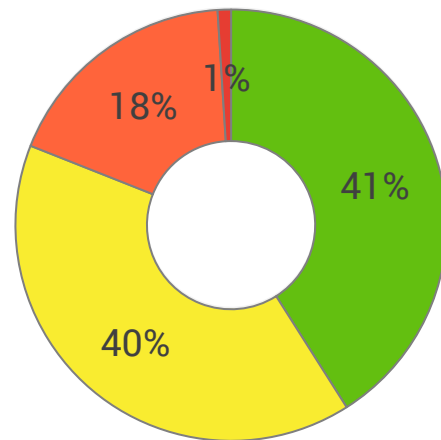
Intervention



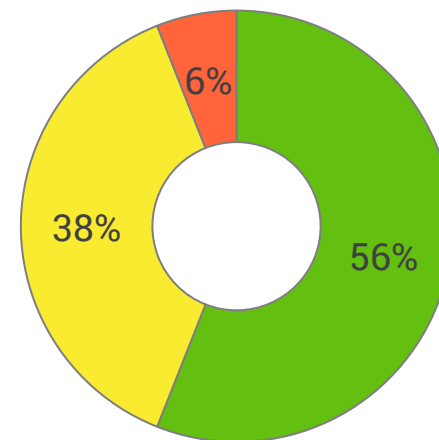
Improved Worker Hydration



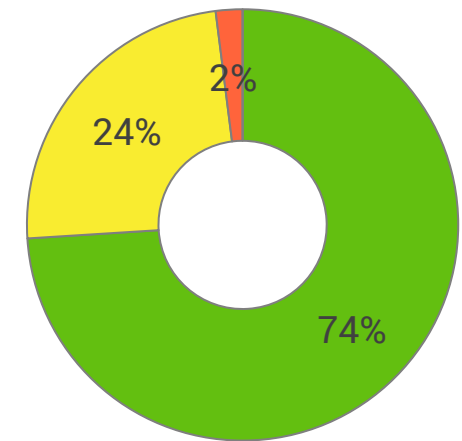
Week 1



Week 2

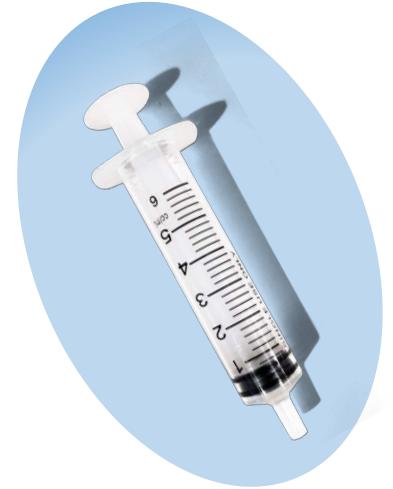


Week 3

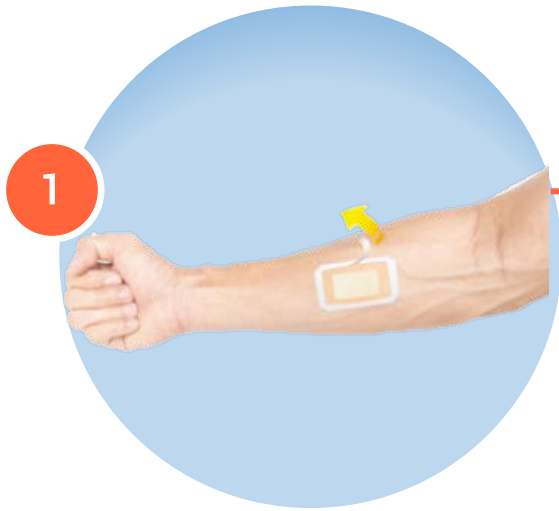


Week 4

# MX3 SWEAT TEST



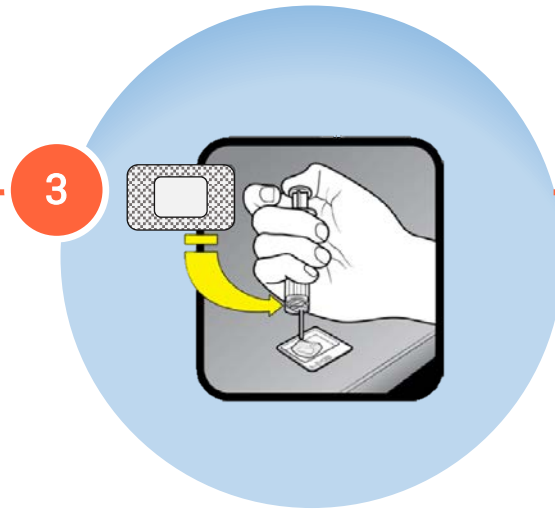
# HOW TO TAKE A SWEAT TEST



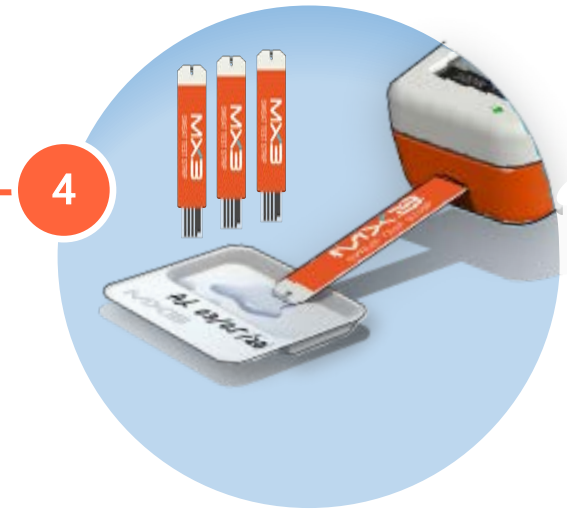
Clean and apply sweat patch on forearm



Exercise (30-60mins)  
Mod/High Intensity



Place sweat pad in plunger and extract sweat



Results in 20-30 seconds  
with 3 measurements

# SWEAT TEST RESULTS



710 mg/L

Low Sodium



## BEFORE EXERCISE

Ingestion of a moderately concentrated (800-1000 mg/L) sodium drink or supplement the night before and ~1 hour before exercise may improve your starting hydration status by increasing plasma volume.

## DURING EXERCISE

To assist with maintaining hydration during intense or extended exercise you may benefit from ingesting a low-concentration (300-700 mg/L) sodium drink or supplement.

## AFTER EXERCISE

If you have a high sweat rate, or exercised for a long duration, ingesting a low-concentration (300-700 mg/L) sodium drink or supplement will assist with rehydration.

## MX3 Sweat sodium test

Ryan Suter

710 mg/L

Low Sodium



Monday, 07 December 2020 8:46 PM

Measured by: Alan Luther

Sweat sodium concentration can range from 250 mg/L to 3000 mg/L. Your result indicates that you have a *lower than average* sweat sodium concentration.

Notes

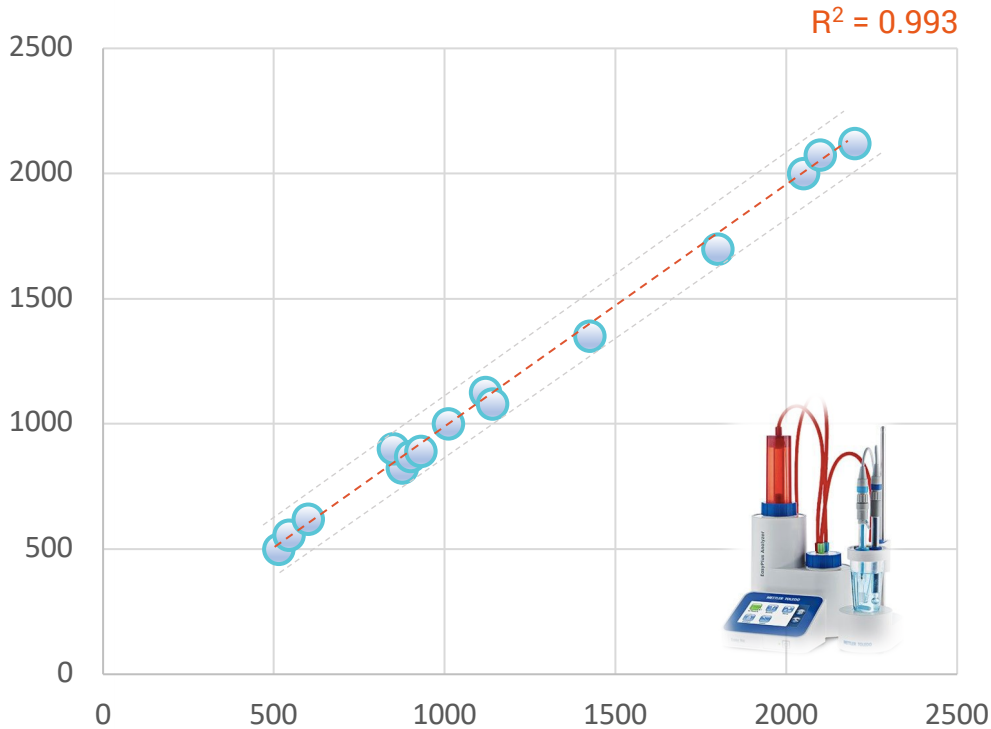
BEFORE EXERCISE	DURING EXERCISE	AFTER EXERCISE
Ingestion of a moderately concentrated (800-1000 mg/L) sodium drink or supplement the night before and ~1 hour before exercise may improve your starting hydration status by increasing plasma volume.	To assist with maintaining hydration during intense or extended exercise you may benefit from ingesting a low-concentration (300-700 mg/L) sodium drink or supplement.	If you have a high sweat rate, or exercised for a long duration, ingesting a low-concentration (300-700 mg/L) sodium drink or supplement will assist with rehydration.
<b>Gatorade Endurance</b> Concentration: 873 mg/L Sodium 218 mg Calories 65 Volume 250 mL	<b>Gatorade (Original)</b> Concentration: 457 mg/L Sodium 270 mg Calories 140 Volume 600 mL	<b>Gatorade (Original)</b> Concentration: 457 mg/L Sodium 270 mg Calories 140 Volume 600 mL
<b>DripDrop ORS (30 g/L)</b> Concentration: 990 mg/L Sodium 990 mg Calories 105 Volume 1000 mL	<b>DripDrop ORS (20 g/L)</b> Concentration: 660 mg/L Sodium 660 mg Calories 70 Volume 1000 mL	<b>DripDrop ORS (20 g/L)</b> Concentration: 660 mg/L Sodium 660 mg Calories 70 Volume 1000 mL
<b>KODA (2 Tablet/L)</b> Concentration: 860 mg/L Sodium 860 mg Calories 12 Volume 1000 mL	<b>KODA (1 Tablet/L)</b> Concentration: 430 mg/L Sodium 430 mg Calories 6 Volume 1000 mL	<b>KODA (1 Tablet/L)</b> Concentration: 430 mg/L Sodium 430 mg Calories 6 Volume 1000 mL

The MX3 sweat sodium test result is not medical advice. If you, your workers or your athletes are experiencing headaches, dizziness, nausea or other symptoms of dehydration please seek immediate medical attention.

# SWEAT SODIUM TEST: VALIDATION



MX3 LAB Pro (mg/L)



Mettler Toledo EasyNa (mg/L)

**KODR**™

MX3 test data compared to lab grade, sweat sodium electrochemical analyzer

Accuracy is **CRITICAL** as sweat tests estimate whole body sweat sodium

( $R^2 = 0.993$ )



# SALIVA HYDRATION TEST



### TEST

Prepare      Measure



### INTERPRET: Fluid Level

Indicates hydration status based on fluid loss.

Hydrated	Mild	Moderate	Severe
<65 mOsm	100 mOsm	150 mOsm	



### ACT

Take immediate action to rehydrate the body with fluid intake.



Hydration Testing System

DISTRIBUTED BY **goSafe**

# How It Works



The MX3 LAB Pro supports multiple tests.

# SWEAT SODIUM TEST



### TEST

Apply      Exercise      Measure



### INTERPRET: Sodium Loss

Indicates sodium lost during high-intensity exercise.

Low	Moderate	High	Very High
750 mg/L	1100 mg/L	1450 mg/L	



### ACT

Choose best electrolyte drink for you based on sodium loss score.



### TRACK & OPTIMIZE

Track data over time in order to develop individualized plans for hydration optimization.



# SWEDEN NATIONAL FOOTBALL TEAM



## *Customer Since January 2019*

- Squad: 26 Players
- MX3 HTS Units ( 2 )
- Frequency of Hydration Measurements:
  - *Twice Daily during training and competition*
- Time taken to measure hydration of squad:
  - *15 minutes*

## *Team Implementation*

- Initial Profiling
- Pre-Training (PREPARE)
  - *Identify dehydrated athletes and action rehydration*
- Post-Training (RECOVERY)
  - *Identify athletes not fully recovered and give actionable rehydration advice strategies*
- Injury Prevention

*“ The MX3 HTS has allowed us to track our athlete’s hydration status and electrolyte replacement needs easily and conveniently, providing key information to help them to maintain optimal hydration ”*

*Dale Reese – Performance and Sports Medicine Coordinator*

# SAN FRANCISCO GIANTS



## *Customer Since SEPTEMBER 2020*

- Team: 40 Players
- MX3 HTS Units ( 2 )
- Frequency of Hydration Measurements:
  - *Daily during season*
- Time taken to measure hydration of squad:
  - *20 minutes*

## *Team Implementation*

- Initial Profiling
- Pre-Training (PREPARE) 3-4 hours prior to training
  - *Identify dehydrated athletes and action rehydration*
- Post-Training (RECOVERY) early evening, player debrief/game preparation
  - *Identify athletes not fully recovered and give actionable rehydration advice strategies*

*“The MX3’s capability of quickly and efficiently testing someone’s hydration and displaying a person’s hydration score trend is what makes it unique”.*

*Saul Martinez – Major League Sports Scientist*

# A PERFORMANCE PLATFORM FOR THE FUTURE



## Hydration Testing

Measure the body's current hydration status immediately and accurately.

[LEARN MORE +](#)



## Sweat Testing

Measure sweat sodium levels so you can replace lost electrolytes.

[LEARN MORE +](#)



## Electrolyte Testing

Get a more complete picture of electrolyte levels.

COMING SOON



## Ketones Testing

Monitor ketone levels precisely.

COMING SOON



## Lactate Testing

Measure levels of Lactic acid easily.

COMING SOON



## pH Testing

Quick test that determines salivary pH.

PROTOTYPE



# GLOBAL EXPOSURE

OVER **2 MILLION**  
tests sold to date

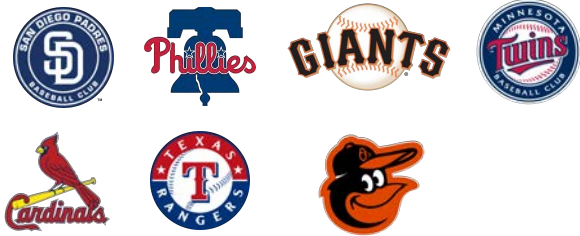
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Some of the largest industrials and  
top professional sports teams in the  
world depend on MX3 each day



# SOME OF OUR ADDITIONAL CUSTOMERS

## MLB



## NBA



## NFL

## OLYMPIC



## COMBAT



## SOCCER



## NCAA



## RUGBY



## MILITARY



## EMS



## MINING





MX3

Thank you

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For additional information contact:  
[goSafe.com/HeatStress](https://goSafe.com/HeatStress)

