

# ReeVUE™

Indirect Calorimeter



# METABOLIC TESTING WITH REEVUE

## DIRECT OXYGEN MEASUREMENT

ReeVue by KORR directly measures the concentration of oxygen breathed out by each patient. The patient merely breathes through a simple mouthpiece as all the exhaled air is collected and analyzed. Because there is a direct correlation between oxygen consumed and calories burned (4.813 calories for every milliliter of oxygen consumed), an accurate measurement of oxygen consumption is an effective measurement of calorie consumption.

## MIXING CHAMBER TECHNOLOGY

A mixing chamber is considered the "Gold Standard" for Indirect Calorimetry (more commonly referred to as a Metabolic Measurement.) In the past, this system has been complicated and expensive, making it only practical for ICU's and research departments. KORR advancements in technology make this method feasible for the typical practitioner.

## SELF CALIBRATING

Adjustments for barometric pressure, temperature, and humidity are key to an accurate  $VO_2$  measurement. The ReeVue measures these parameters during each routine calibration cycle, then automatically compensates to standard (STPD) conditions.

## » CLEAN

When an Indirect Calorimeter takes its measurement at the mouth, the patient draws both their inhalation and exhalation through the measurement device (pneumotach) located in the equipment or attached to the mask. The air they breathe in will pass through the same mechanism as countless patients before them. KORR uses a one-way valve in the disposable MetaBreather mouthpiece. This draws in fresh room air with each inspiratory breath and eliminates concerns about cleaning equipment between patients.

## » REIMBURSABLE

The ReeVue performs an oxygen uptake test, which is CPT code **#94690**.

## » SIMPLE

The ReeVue has a simple user interface that assists the operator from start to finish. No training or certification is required. It does not require a computer or software, and even the printer is optional. Everything you need is at your fingertips!



## TESTIMONIALS

### Dr Anton W. Steiner, MD, PhD

TriStar Medical Clinic, Los Angeles, California

Metabolic measurement is the key component we use for initial diagnostic testing to evaluate and treat overweight and obese people. It provides scientific principles to interact with patients and get them thinking about calories and metabolic rates. Therefore, it helps them be more successful short term, and provides guidelines for maintenance long term. This is a great device.

### Dr Brent Larsen

Physician For Living, Salt Lake City, Utah

In our medical weight loss clinic, we use the ReeVue Indirect Calorimeter. We use the RMR to set a diet based on how many calories patients burn at rest. The test takes about 10 minutes, the clients feel like they are getting a really good assessment, and they are all really interested in what their metabolic rate is. Testing someone's metabolic rate is key to finding those few people who lie outside the norm so you know where to set their caloric limits.

“Estimated energy needs should be based on resting metabolic rate (RMR). If possible, RMR should be measured. ”

—American Dietetic Association Position on Weight Management 2009

In 2006, the Northwestern Comprehensive Center on Obesity tested the RMR of 76 of their female patients.<sup>1</sup> 17% of them would not have lost weight on the standard “1200 calorie a day” diet. In fact, they probably would have gained from 5 to 32 pounds in one year. Yet there were no other indicators that set them apart from those who could lose weight on that same diet.

Is it any wonder patients are frustrated?

## So what can a doctor do?

### ASSESS

A simple 10 minute RMR test can accurately pinpoint how many calories a patient needs to consume to lose weight.

### TEACH

Showing a patient the results of their own metabolic test gives you the opportunity to teach solid scientific principles within the context of their own bodies. Studies show that this is the ideal circumstance to elicit behavior change.

### REFER

Armed with a proper medical assessment, your patient is now ready to be referred to a weight loss expert. You may have an expert program set up within your practice. Or you may want to refer to a Bariatrician or community based program. Your KORR representative will be happy to assist you with this next step.

BMI  
**32.8**

Suggested  
Caloric Intake<sup>2</sup>  
**2038**

Measured  
RMR  
**1454**

How much weight  
will he gain this  
year of he “sticks  
to his diet?”  
**60 lbs**

BMI  
**30.1**

Suggested  
Caloric Intake<sup>2</sup>  
**1235**

Measured  
RMR  
**1037**

How much weight  
will she gain this  
year of she “sticks  
to her diet?”  
**20 lbs**

(1) Roth J, Kushner R, Sanders D. Comparison of Predictive Equations to Portable, Office-Based Indirect Calorimetry, in an Overweight and Obese Population. Poster session presented at: NAASO's 2006 Annual Scientific Meeting; 2006 Oct 20-24; Boston, MA.

(2) Mifflin MD, St Jeor ST, Hill LA, Scott BJ, Daugherty SA, Koh YO. A new predictive equation for resting energy expenditure in healthy individuals. AM J Clin Nutr. 1990 Feb;51(2):241-7



## How is an RMR test performed?

### **PATIENT PREPARATION**

- No exercise the day of testing
- Fast 4 hours prior to appointment
- Avoid stimulants, such as caffeine

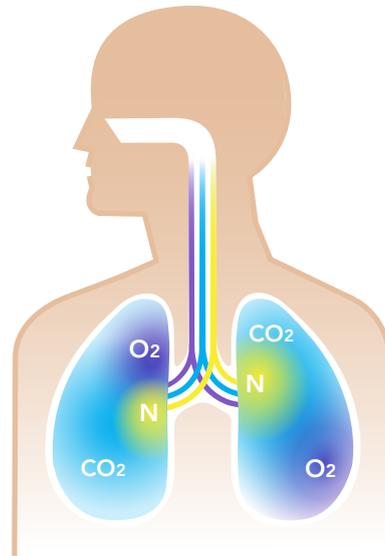
### **TESTING**

- Patient sits or reclines in a comfortable position.
- The patient breathes into a MetaBreather mouthpiece. A nose clip ensures that all the exhaled air is analyzed by the ReeVue.
- After 8-10 minutes, the device will beep, indicating the test is finished.
- RMR results are visible on the screen and can be printed out in a manner that aids patient education.

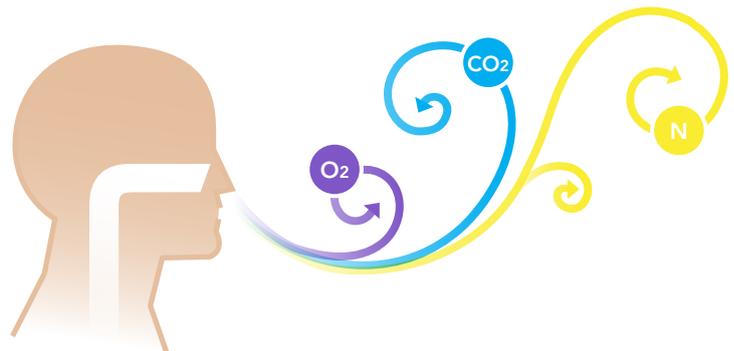
# THE MIXING CHAMBER

## KORR's Gold Standard Technology

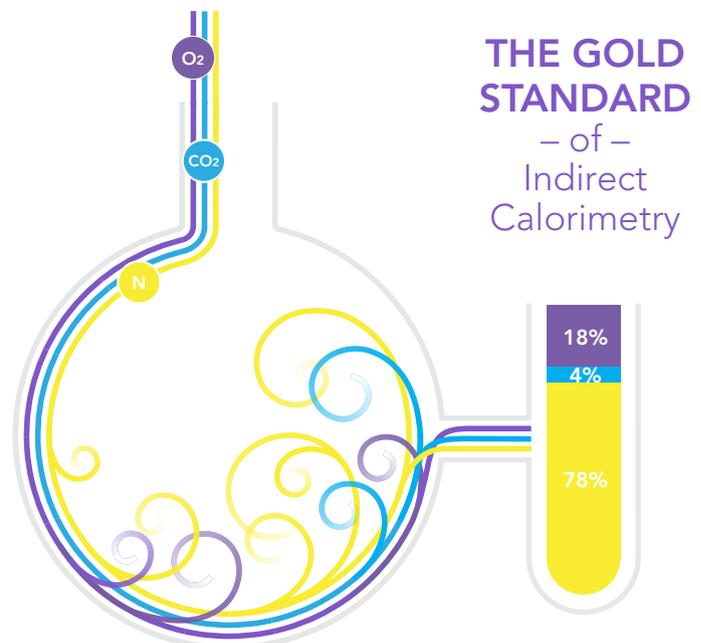
In the simplest of terms, an Indirect Calorimeter measures the percent of oxygen concentration in the gases a person exhales to determine how much  $O_2$  was consumed by the body. But when you exhale, that oxygen concentration changes throughout the breath itself. Because once you breathe a lung full of air, some of that  $O_2$  air is actively being exchanged for  $CO_2$ , while some is sitting inactive in "dead space".



There are different methods for measuring oxygen consumption. Technologies that measure  $O_2$  at the mouth can only graph the rapidly changing gas as it leaves the body, and then must rely on a mathematical algorithm to determine the percentage of oxygen concentration. In his textbook: *The Essentials of Cardiopulmonary Exercise Testing*, Dr. Jonathon Meyers, PhD of Stanford University warns that sampling each breath can greatly affect precision due to the variability of oxygen uptake in each sample. He states, "One should resist the tendency to use breath-by-breath data simply because the technology is available....it is inappropriate for general clinical applications."<sup>1</sup>



A mixing chamber collects ALL the exhaled gases into a chamber where they are literally mixed together. Then the evenly mixed gas is sampled to measure the exact oxygen percentage. This is the same precision technology used by research grade metabolic carts. All KORR products are based on the "Gold Standard" of mixing chambers, giving customers the most accurate and reliable results available.

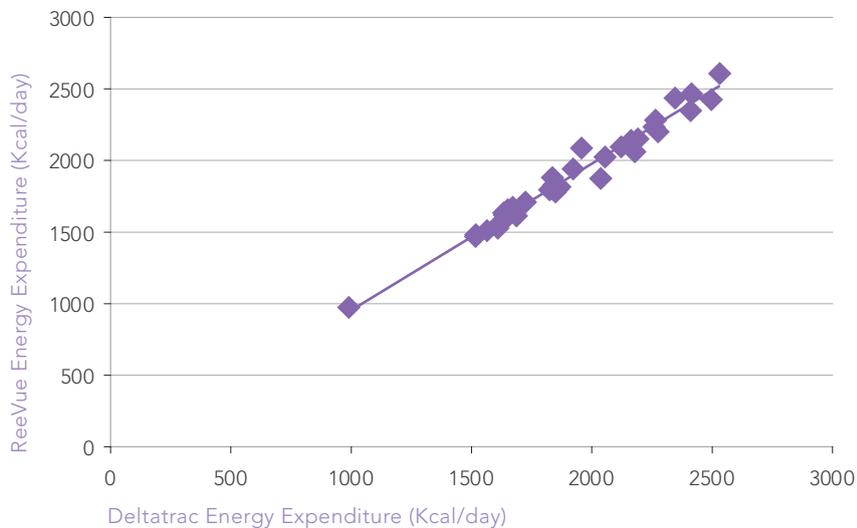


(1) Meyers, Jonathan. *Essentials of Cardiopulmonary Exercise Testing*. Champaign, IL: Human Kinetics, 1996, pg 68-69.

# REEVUE SPECIFICATIONS

Measurement.....	Oxygen Uptake, expired gas analysis
Test duration .....	8 minutes average
Dimensions.....	12"x 9"x 4" (W x L x H)
Weight .....	5.75 lbs (2.6 kgs)
Age range .....	5 – 99 years
Database .....	Stores 100 tests
Warranty.....	1 year manufacturer
Options.....	Roll cart, carrying case, promotional materials, diet aids
Outputs .....	REE/RMR Predicted REE Estimated TEE based on REE VO <sub>2</sub> FeO <sub>2</sub> Minute volume Tidal volume Respiratory Rate BMI

ReeVue vs Deltatrac XY Plot, Energy Expenditure



$$Y = 1.024x - 70.9$$

$$R^2 = 0.975$$

## KEY STATISTICS

Average difference:  
**24.7 kcal/day (-1.45%)**

Standard deviation of difference:  
**57.1 kcal/day (2.85% of reading)**

$$r^2 = 0.975 \text{ (} r=0.987 \text{)}$$



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