An Integrative Personalized Professional Practice using a Validated Wearable Indirect Calorimeter
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The accuracy of Breezing Pro/Med™ for resting metabolic parameters measurements as VO$_2$, VCO$_2$ and REE has been validated. This metabolic tracker helps healthcare providers assess the metabolic health of their patients and develop personalized weight management programs with better clinical outcomes. We have also proven that patients at home can use the mask device and assess their information remotely via HIPPA–compliant methods.

Introduction:
Resting Energy Expenditure (REE) is defined as the energy necessary for basic natural body functions and it could be affected by factors as age, sex, BMI, etc. The knowledge of this metabolic parameter is valuable for weight management and for understanding of metabolic health. Breezing Pro/Med™ is a new device implemented for the comfortable measure of metabolic parameters based on indirect calorimetry method, in a 10 minutes breath test. We have reported a validation through the gold standard Breezing Pro/Med™ metabolic health.

Methods:
The validation was carried out over 20 healthy participants under resting conditions. The performance of Breezing Pro/Med™ was analyzed by measuring VO$_2$, VCO$_2$, and REE in the same run experiment with three methods simultaneously by adapting and connecting the mask to the MGC and Douglas Bag Method. The results were compared and the correlation slope and R-squared coefficients for all of them were found to be close to 1. Finally, a second validation on Telemedicine setting was carried out and have demonstrated the advantage over bulky and expensive equipment, improving the condition of measurement and yielding accurate values of metabolic parameters as VO$_2$, VCO$_2$, and REE. The practical and easy use of this device makes Breezing Pro/Med™ a valuable product for improving self-management at home.

Results:
The comparative correlation plots for the metabolic parameters indicate a strong correlation between the two methods with R$^2$ of ~0.9, and slopes of ~1.

Discussion:
The performance of Breezing Pro™ was analyzed by measuring VO$_2$, VCO$_2$, and REE in the same run experiment with both methods simultaneously by adapting and connecting the mask to the MGC, and collection of breath for Douglas Bag Method. The results were compared and the correlation slope and R-squared coefficients for all of them were found to be close to 1. Finally, a second validation on Telemedicine setting was carried out and have demonstrated the advantage over bulky and expensive equipment, improving the condition of measurement and yielding accurate values of metabolic parameters as VO$_2$, VCO$_2$, and REE. The practical and easy use of this device makes Breezing Pro/Med™ a valuable product for improving self-management at home.