# Title: T2D nursing and healthcare guide based on GH-Method: math-physical medicine to develop a simple but accurate conversion factors from annualized quantitative analysis of relationships among PPG, food, and exercise

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**Keywords: math-physical medicine, methodology, PPG, FPG, A1C, artificial intelligence**

## I. Abstract Body (up to 250 words)

The author presents a simple accurate estimation of conversion ratios between postprandial plasma glucose (PPG) versus carbs/sugar intake amount and post-meal waking steps. The author collected 12,249 data of PPG, carbs/sugar grams, and post-meal walking steps for 1,361 days. He used his developed AI-tool to get predicted PPG values. Furthermore, he applied his acquired knowledge from the GH-Method: math-physical medicine, which contains impacts on PPG from both food nutrition and exercise. Finally, he developed two simple conversion equations of PPG vs. Carbs/Sugar intake and PPG vs. post-meal walking. He has named this highly accurate technique as the natural intelligence (NI) approach.

Here are the observed facts shown on Table 1:

1) Although all waves fluctuate violently, their annual averaged values are mostly within a narrow (healthy) range.

2) His averaged measured values: PPG is ~118 mg/dL, carbs/sugar per meal is ~15 grams, post-meal walking is >4,000 steps.

3) His developed 2 equations: each gram of carbs/sugar generated 2.4 mg/dL of PPG and each thousand steps of walking reduces 5 mg/dL of PPG.

4) Using these two simple conversion equations, both of his AI-based and NI-based PPG predictions, have achieved ~100% accuracy in comparison with 4,083 finger-piercing measured PPG data.

The author has developed an accurate PPG prediction method to provide as a nursing tool and healthcare guide to T2D patients. Once patients' PPG (~70% to 85% of A1C formation) is under control, their A1C will most likely follow suit.

## II. Image



## III. Reference:

1. Hsu, Gerald C. (2018). Using Math-Physical Medicine to Control T2D via Metabolism Monitoring and Glucose Predictions. *Journal of Endocrinology and Diabetes, 1*(1), 1-6.

2. Hsu, Gerald C. (2018). Using Signal Processing Techniques to Predict PPG for T2D. *International Journal of Diabetes & Metabolic Disorders, 3*(2),1-3.

3. Hsu, Gerald C. (2018). Using Math-Physical Medicine and Artificial Intelligence Technology to Manage Lifestyle and Control Metabolic Conditions of T2D. International *J*ournal of Diabetes & Its Complications, 2(3),1-7.

4. Hsu, Gerald C. (2018). Using Math-Physical Medicine to Study the Risk Probability of having a Heart Attack or Stroke Based on 3 Approaches, Medical Conditions, Lifestyle Management Details, and Metabolic Index. *EC Cardiology*, *5*(12), 1-9.

## IV. Biography:

The author received an honorable PhD in mathematics and majored in engineering at MIT. He attended different universities over 17 years and studied seven academic disciplines. He has spent 20,000 hours in T2D research. First, he studied six metabolic diseases and food nutrition during 2010-2013, then conducted research during 2014-2018. His approach is "math-physics and quantitative medicine" based on mathematics, physics, engineering modeling, signal processing, computer science, big data analytics, statistics, machine learning, and AI. His main focus is on preventive medicine using prediction tools. He believes that the better the prediction, the more control you have. (Up to 100 words)

## V. Presenting author details



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