

## Longevity Analysis by Using the Overall Metabolism and Life Routine Regularity via GH-Method:Math-physical Medicine.

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### Abstract

**This paper describes one of the author's hypothetical theories of relationship between life longevity and overall metabolism (the macro-system view), including specifically the life routine regularity (a specific micro-category). The dataset is provided by the author, who uses his own type 2 diabetes metabolic conditions control, as a case study via the "math-physical medicine" approach of a non-traditional methodology in medical research..**

**Keywords:** Math-physical medicine, Hypothetical theories, Type 2 diabetes

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Math-physical medicine (MPM) starts with the observation of the human body's physical phenomena (not biological or chemical characteristics), collecting elements of the disease related data (preferring big data), utilizing applicable engineering modeling techniques, developing appropriate mathematical equations (not just statistical analysis), and finally predicting the direction of the development and control mechanism of the disease.

The author has spent 24,000 hours over the past 9-years (2010-2019) to conduct his own research on metabolism, endocrinology, and chronic diseases, especially diabetes.

He spent the entire year 2014 to establish a mathematical model of metabolism which includes 4 output categories (weight, glucose, blood pressure, lipids) and 6 input categories (food, water, exercise, sleep, stress, life routine regularity). There are approximately 500 detailed elements included in these 10 categories. Since the "theoretical" and a complete set of their interactive relationships would be an immense task, which includes calculations of  $500!$ , this step is a huge undertaking without any true benefit. Therefore, the author assigned various weighting factors and to seek important but partial interactions to investigate. By utilizing concepts and methods of topology, partial differential equation, nonlinear algebra from mathematics, and finite element method from engineering, he was able to define an approximated metabolism model with two newly defined variables, metabolism index (MI) and general health status unit (GHSU). This dynamic model can be expressed through these two variables to describe a person's health status at any moment of time.

Period A, the year 2017 (1/1/2017-12/31/2017) was the "best conditions" period, i.e. lowest numerical scores (means the highest performance) on input category, output category, MI, and GHSU. Period B, from 1/1/2018 through 6/30/2019, is the "not-so-perfect conditions" period, i.e. higher numerical scores (means poorer performance) on all categories. During period B, the author has attended more than 35 medical conferences to present more than 60 medical papers. In addition, during this 18-month period, he wrote a total of 162 abstracts with 22 full-length articles published in various medical journals. As a result, during period B, he overworked himself at the cost of damaging

his overall health, possibly shortening his life expectancy to some degree.

Most research have shown that majority of people with long lives lived a simple but routine lifestyle. Therefore, let us focus on the category of "life routine regularity". The author's performance score for this specific category has increased (means worsen) by 1.98%. More specifically, this increased numerical score (i.e. worsen performance) is the combined results from air-flights, disturbance of food and exercise routines, weather and living environment changes, jet lag, and sleep pattern disturbance. It is quite interesting to find out that the author's stress level has no significant change. This is probably due to the fact that medical research work for the author is merely his personal hobby instead of the ways and means to make a living with the aim of fame, power, and money. In addition, he has not suffered any stress from a "boss" and meeting "deadlines" from his medical research like other working people at their jobs.

This big data analytics based on ~600,000 data over 2.5 years and his developed metabolism model have shed some light about the impact on his life longevity due to his overall metabolism changes, especially his life routine regularity. Based on the findings from this specific analysis, the author has decided to change his forthcoming lifestyle and work on a different method to conduct his important medical research and find a better way to distribute his research results.

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