

# Establishing rhythmic regularities in cell physiology: a novel global program to thwart cancer

## Abstract

This article establishes a novel globally feasible approach to help overcome cancer related challenges through development of lasting circadian and circannual regularities and harmonies in nutritional and physical activity programs. This is to minimize risks of irregularities in cell physiology and to slow down aging.

**Keywords:** regularity, harmony, cell physiology, gene, cancer

Volume 2 Issue 2 - 2015

**Akbar Nikkhah**

Department of Animal Sciences, University of Zanjan, Iran

**Correspondence:** Akbar Nikkhah, Chief Highly Distinguished Professor, Foremost Principal Highly Distinguished Elite-Generating Scientist, Department of Animal Sciences, Faculty of Agricultural Sciences, University of Zanjan, National Elite Foundation, Iran, Email anikkha@yahoo.com

**Received:** January 27, 2015 | **Published:** June 19, 2015

## Introduction

The objective of this article was to establish a lucid and feasible global guideline in preventing and managing cancer. Cancer is characterized by arrhythmic irregularities in cell biology and gene functioning.<sup>1</sup> Any strategy and action that could reduce such irregularities can have the potential to prevent, postpone and deteriorate cancer-causing factors. An optimal strategy to minimize irregularities in cell ecology would be to establish and retain regularities in cell physiology and metabolism.

Among the most feasible determinants of life style and quality are nutritional management and physical activity.<sup>2-6</sup> Establishing rhythmic regularities in human nutrition and exercise is considered a key to overcoming cancer related challenges. As far as nutrition is concerned, creating a rhythmic program in the type, amount and timing of nutrient supply to the body and its physiologically versatile tissues and cells are of utmost priority. Rhythmic nutrition is, by definition, a disciplined and timely nutrition.<sup>4,7</sup> From an evolutionary viewpoint, cell physiology demands and dictates that particular nutrients are supplied at particular circadian times (i.e. the 24-h period). For instance, since human endocrinology has been evolved to assimilate and metabolize energizing nutrients just prior to the commencement of the activity period in early morning through the late afternoon, effective metabolism does not occur during evening and overnight.<sup>3,7</sup> Thus, care must be exercised to not overload the cells with nutrient oversupply nocturnally.<sup>4</sup> However, more insight must be generated on optimum times of receiving specific types and amounts of different nutrients before rhythmic regularities in nutritional programming of cell physiology may be perfectly established.

Physical activity as another key effector of cell efficiency, human health and life quality must also develop rhythmic regularities in the postmodern man. Despite the extensive research on the inevitability of adequate exercise for optimal cell function and aging,<sup>8-10</sup> little contemplation has been devoted to underlining the significance of establishing and maintaining rhythmic regularities in physical activity. Since genes perform steadily in orchestrating cell physiology and aging process,<sup>2</sup> any strategy that aims to durably and significantly influence on cell genomics, proteomics and metabolomics should

possess a rhythmic and likely a circadian nature. This theory implies that for physical activity to be largely effective in slowing down the aging and minimizing the risk of growing irregularities in cell physiology, it should be performed regularly and certainly enduringly. Such a lasting regularity in exercise will help genes and proteins mentor the cell towards maintaining the uniformity, stability, and rhythmicity in its function and overall body health. Characterizing the chronological and circadian nature of such regularity in physical activity requires extensive future research.

## Implications

In a nutshell, cancer-preventing strategies must concentrate on establishing and maintaining feasible regularities in cell physiology. This may be accomplished through development of robustly and durably rhythmic and regular nutritional and exercise programs that fit into the harmonic circadian and circannual evolution of the diurnal human.

## Acknowledgements

The Iran's Ministry of Science Research and Technology, National Elite Foundation, and University of Zanjan are gratefully acknowledged for supporting the author's global programs of optimizing science edification in the new millennium.

## Conflict of interest

Author declares that there is no conflict of interest.

## References

1. Kerr JF, Winterford CM, Harmon BV. Apoptosis. Its significance in cancer and cancer therapy. *Cancer*. 1994;73(8):2013–2026.
2. Nikkhah A. *NutriGenomics: An Epi-Innovative Science*. Zanjan-Tehran, Iran: Jahade-Daneshgahi Publishing Organization; 2013.
3. Nikkhah A. *Time of Feeding an Evolutionary Science*. Saarbrücken: Lap Lambert Academic Publishing GmbH & Co. KG; 2012.
4. Nikkhah A. Science of eating time: A novel chronophysiological approach to optimize glucose-insulin dynamics and health. *Journal of Diabetes Mellitus*. 2012;2(1):1–4.

5. Dietary Reference Intakes. Recommended Intakes for Individuals. *Food and Nutrition Board*. Institute of Medicine, National Academies. National Academy of Sciences, Washington DC, USA; 2007.
6. United States Report of Department of Health and Human Services. Physical activity and health: a report of the Surgeon General. US Department of Health and Human Services, Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion. 1996.
7. Nikkhah A. When to eat to beat obesity and diabetes. *J Diabetes Metab*. 2014;5:e115.
8. Shephard RJ. *Aging, physical activity, and health*. Champaign, IL: Human Kinetics Publishers; 1997. 488p.
9. Pereira MA, Rifas-Shiman SL, Kleinman KP, et al. Predictors of change in physical activity during and after pregnancy: Project Viva. *Am J Prev Med*. 2007;32(4):312–319.
10. Nikkhah A. Aging evolution: A postmodern public apprehension. *International Journal of Medicine and Pharmacy*. 2014;2(1):1–22.