

REVIEW ARTICLE

The intervention on aging system: A classification model, the requirement for five novel categories

Raymond D. Palmer^{1,2} ¹Science of Aging, South Perth, WA, Australia²Full Spectrum Biologics & Health Sciences, WA, Australia**Correspondence**Raymond D. Palmer, Science of Aging, South Perth, WA, Australia
Email: ray.palmer@me.com**Abstract**

Aging is widely considered an immovable fact of life. Cultural conditioning has ensured that therapeutics for extreme human lifespans are considered out of reach technologies. However, longevity therapies such as stem cell replacement, fasting, gene therapies, fasting mimetics such as metformin and rapamycin, regulation and tissue reprogramming with OSK transcription factors, blood dilution, metabolic pathway engineering, reversal of epigenetic drift, heterochronic parabiosis, coenzyme replacement technologies (nicotinamide adenine dinucleotide) and a plethora of other established sciences are showing great potential at slowing down the rate at which tissues enter dysfunction. Recent discoveries have shed light on major mysteries of the aging process. Longevity-based discoveries are not only landing quickly, but therapies to prevent or reverse those drivers of aging are also being devised regularly and this is opening up an entirely new industry, the longevity industry. This presents the requirement for a new classification system where subjects can be divided into specific groups based on their potential for mortality. This system also enables the public to target which class of this classification system they wish to be on. Moving the population on the classification system to become more disease resistant holds great benefit for society and governments as a whole.

KEYWORD

aging, experimental, gerontology, health industry, longevity industry,

1 | INTRODUCTION

The longevity industry is vastly different than the health industry. Health foods and health products may deliver health benefits, but these benefits are mostly only available if you are deficient in a vitamin or mineral, but no health product has been shown to profoundly extend lifespan (if at all).¹ The study by Khan et al. 2019 conducted nine systematic reviews, and four randomized control trials were chosen that embodied a total of 277 trials, 24 interventions, with a total of 992,129 participants. These data from John Hopkins

Medicine support the idea that an avid user of health products will still age and experience biological decay at their natural rate of aging. John Hopkins did find minor health benefits from low-salt diet, omega-3 fatty acids supplements, and possibly folic acid supplements in some people.

Lifespan and health-span remain separate challenges, as lifespan simply denotes the duration of a person's life, whereas health-span refers to the time a human can remain fit, vibrant, and healthy. The onset of biological decay and the elimination of health-span appears to be the origin of where suffering, disease, and death emanate from.

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If aging is the number one cause of suffering, disease, and death,² then it is very likely that future health enthusiasts will turn their energy to longevity compounds as opposed to health products. Fending off biological decay by restoring youthful cell function may become the more informed choice and an extremely popular target for tomorrow's population with the technologies to restore cell function now arriving.^{3,4}

Existing methods that medical practitioners currently use to prescribe or advise their clients with may also change, with this new paradigm shift away from health products and into maintaining youthful cell function combined with a healthy lifestyle. The human body comprises on average 37×10^{12} cells, with each cell performing millions of chemical reactions a second,⁵ and it is the cellular and nuclear machinery that changes over time, which causes cells to enter age-related dysfunction.⁶ Restoring adenosine triphosphate levels,⁷ methylation markers to previous states,⁸ preventing telomere attrition,⁹ and repairing deoxyribonucleic acid (DNA)¹⁰ are already possible and primary targets in the quest for healthy aging.

2 | CLASSIFICATION SYSTEMS

Classification systems are found across all facets of industries and life. Systems that classify or scale various classes enable subjects to immediately understand the relative position of something based on the applicable criteria that is known.

The longevity industry has now entered a new era, where various longevity technologies are being used by a growing cohort of subjects worldwide. As humanity enters this new era, subjects and their healthcare advisors, even employers such as military or insurance companies may require a classification system to assist in understanding what therapies should be implemented (or avoided) at what time during life. A simplistic classification system with five classes enables the public to easily see where they sit on a mortality scale and may provide motivation to change their lifestyle.

- This system is inversely proportional to mortality: the higher your class, the more probable you are to develop disease or undergo loss of life.

With the emerging longevity industry, a surgical difference between various health products and longevity technologies that may restore cell function to more youthful levels has now emerged where many health products may become redundant in the quest for longer but not healthier lives.¹¹ Longevity compounds are emerging into the market as consumers start understanding that maintaining youthful cell function is paramount to longevity and age-related disease prevention.¹² Even though many vitamins and minerals can offer beneficial effects, that may not offer life-extending effects as shown by Khan et al. 2019¹.

In today's modern world it is extremely rare to find undernourished people in developed nations. This implies that if the diet is balanced, then the evidence suggests that vitamin or mineral

supplementation may not be required, especially if the goal is for extended lifespan.¹³ Even though this multibillion-dollar vitamin industry is built on the belief that vitamins and minerals will hopefully ward off disease and death, the evidence does not support this ideology.^{11,14} Therefore, longevity compounds and technologies may very well be the future of the health and life-extending therapies market.

The difference between the two industries brings this discussion to the requirement for a classification system that captures a subject's position for health and longevity that provides an easy to use and prompt method for understanding one's own longevity.

This novel classification system does not target specific biomarkers such as blood, microbiome, or genetic factors such as telomeric or DNA methylation and also does not include cancer or other disease-screening methodologies. Instead, the system is simply focused on a person's activity and involvement with emerging or established longevity technologies to simply categorize their prospects for longevity.

Even though this classification system may be engineered in future reviews into an extremely detailed and scientific platform, that would be misguided in this instance as the point is to deliver an easy to follow and fast to use classification system that the regular population can understand.

Aging is the number one cause of suffering, disease, and death, so having a system that enables the general public to easily understand and also aim their lifestyle choices with may assist populations in staying healthier, living longer, contributing for longer, and furthermore, saving governments vast amounts of unnecessary health spending.^{2,15}

Note that our classification system range is from the grossly unhealthy (Type 5) to those that in the future may obtain biological escape velocity (Types 1's), which simply means staying ahead of biological decay and disease.

3 | CLASSIFICATION SYSTEM/SCALE—THE INTERVENTION ON AGING

Shown below—Type 5's (those that are moving through life without any protection to dying) down to Type 1's (biological escape velocity).

Type V – The Type 5 category perform rudimentary functions to maintain life, such as washing hands and using seatbelts in cars; however, their diet includes fast food and occasional healthy food, these subjects may hold excessive weight, and overall, they do very little to extend their life or health span. Mortality Risk—Probable.

Type IV – The Type 4 demographic exercise and eat relatively healthy and may use health supplements. Type 4's attempt to navigate away from toxins such as cigarettes, perform weight management, and may restrict or abstain from alcohol though do not implement any emerging or significant longevity technologies or regimes such as fasting or clean plant-based diets. Mortality Risk—Moderate.

Type III – The Type 3 class is proactive in using anti-aging technologies, they actively seek and study longevity for increased awareness, they use nicotinamide adenine dinucleotide precursors to maintain cellular metabolism¹⁶ and foods specifically known for their anti-aging properties,^{17–22} they possibly practice fasting,^{23–25} use fasting mimetics,²⁶ exercise and are lean or muscular, target a more epigenetic diet,¹⁹ and steer clear of any biological insults.²⁷ Mortality Risk—Unlikely.

Type II – The Type 2 cohort implement a strict longevity lifestyle that is very similar to Type 3's; however, Type 2's also implement early disease prevention strategies such as whole genome sequencing, whole exome sequencing, gene panel, single gene testing, and methylation analysis to garner data on their disease predisposition and penetrance. Other testing such as glycomic testing,²⁸ blood plasma, and proteomic testing²⁹ and other biomarkers that can assist in predicting and in some cases preventing disease are also used. Mortality Risk—Low.

Type I – Type 1's encompass everything that Type 2's perform; however, Type 1's have achieved a status of disease prevention and developed strategies to prevent further biological decay through various lifestyle decisions,³⁰ including full spectrum diagnostic services,^{31,32,33} gene editing³⁴ and tissue reprogramming, and immune system/thymic rejuvenation^{3,35–37} to ensure high resistance to disease and dysfunction.

Even though the technology to deliver Type 1 status remains in its infancy, the technologies discussed here are all under development. If these emerging technologies can enable subjects to achieve Type 1 status, then humanity would have reached what this paper refers to as Biological Escape Velocity, which simply infers that these subjects are able to stay in front of biological decay and disease. Mortality Risk—Extremely Low.

4 | EXAMPLES OF LONGEVITY TECHNOLOGIES

Aging could be considered a measured loss of homeostatic mechanisms that augment biological decay in fully developed tissues. Various insults to biological systems such as ultraviolet light, waning coenzymes such as nicotinamide adenine nucleotide (NAD)^{38,39} and reduced levels of natural antioxidants such as glutathione,⁴⁰ superoxide dismutase,⁴¹ or diminishing mitochondria levels⁴² incapable of powering the cell efficiently and including transmutations of the genome⁴³ that may ultimately deliver a disease phenotype in later years of human life.

Various longevity technologies now exist, such as NAD precursor technologies,⁴⁴ stem cell replacement therapy,³⁵ mitochondrial boosting technology,⁴⁵ telomerase induction techniques,^{46,47} blood dilution,⁴⁸ and possible organismic-wide rejuvenation through OSK reprogramming,⁸ as well as various other technologies to stave off the onset of biological decline. These types of well-understood technologies are still emerging, though they set the stage for the requirement of a longevity classification system that the public and all

healthcare physicians can use as an easy-to-follow system that may assist subjects in changing various lifestyle factors for better health.

5 | CONCLUSION

Longevity technologies continue to emerge extremely rapidly, and this lays down the requirement for an aging scale that users can aim their biology towards. This allows the general population to easily see and learn what they can do and where they currently sit on the classification system.

The scale shown here clearly demonstrates that there are various stages to longevity management that are completely distinguishable between one another. A classification system such as this also paves the way for governments to set goals and targets for their aging populations. The classification system has been intentionally designed to remain simple and lucid so that all ages and all backgrounds can instantly see where they sit on the classification system and how simple it may be to move onto healthier levels, with the idea being to offer the general population a visual metric to motivate them toward a healthier lifestyle.

Even though Type I status is not yet achievable, the scale intentionally includes this category, not only for future use, but as a symbol for humanity's scientific vision and quest to deliver a disease-free and much healthier society. When the general population sees that a disease-free phenotype is an achievable goal, we may see more choices that lead them to a longer and healthier life.

6 | LIMITATIONS OF STUDY

None.

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None.

CONFLICT OF INTEREST

Raymond D. Palmer is Chief Scientific Officer of Science of Aging, Author of *The Anti-Aging Toolkit*, Host of *The Longevity Experts*, and inventor of numerous biotech patents.

ORCID

Raymond D. Palmer  <https://orcid.org/0000-0003-1898-0935>

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