

The Perception of Functional Deconditioning of the Elderly in History

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THE AGING process is individual, natural, inexorable, progressive, biological and complex, during which there is a decrease in the ability of the body to adequately respond to internal and/or external stress factors. Aging is an emerging global threat to the public health, with consequences in all sectors of society and is a major risk factor for functional deficiencies, chronic diseases and mortality (European Commission 2019).

Population aging is, alongside demographic growth, migration and urbanization, the main demographic characteristic of the present moment. Demographic aging has three important features: an increase in the proportion of elderly people, an increase in life expectancy at birth and an increase in life expectancy at 65 years old. In 2018, for the first time in history, the number of people aged 65 exceeded that of children under the age of 5. Between 2019 and 2050, the number of people over 65 will double, reaching 1.5 billion. Globally, in 2019, the proportion of those over 65 years was 9% (in Europe 19.7%), being expected to reach 12% in 2030 (in Europe 22%) and 16% in 2050 (in Europe 29.5%). The number of people over 80 is increasing even faster than those over 65: in 1990, there were 54 million, reaching, by 2019, 143 million (40% of these are in Europe and North America), and it is estimated to reach over 426 million in 2050 (*World Populations Prospects 2019*).

Life expectancy at birth has reached a world level of 73.5 years, in Europe being of 81 years (from 69 years in 1960) and in Romania of 75.3 years (from 65.6 years in 1960) (Eurostat 2019; WBG 2019). In the US, during the 20th century, life expectancy at birth increased from 48 years (in 1901) to 74 years (in 2001) for men and from 51 years to 80 years for women (CDC 2004).

But what is the quality of life of these additional years? What is the social cost of these additional years? These are questions that require a complex and comprehensive approach (Daley and Spinks 2000); as Seneca said in *Epistulae Morales ad Lucilium*: “Quam bene vivas refert, non quam diu” (Not how long, but how well you have lived is the main thing).

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According to statistics, only half of the years of old age are lived under healthy aging, defined as the absence of functional limitation or disability. Life expectancy at 65 years in Romania is 14 years in men (only 6 of which are in good health) and 17 years in women (5 of which are in good health), compared to 18.1 years in men (9.8 of which are in good health) and 21.4 years in women (10.2 of which are in good health) in the European Union, the largest percentage being in France (23.8 years for women and 19.7 years for men) (Eurostat 2019; Eurostat 2020; OECD 2021).

The subject of aging has never been a popular one for the medical profession. Over the years, there has been a certain lack of interest or empathy regarding the infirmities and the diseases of the elderly; diagnostic and therapy problems tend to be neglected, to the disadvantage of the individual and the community, most contributions to the study of aging being of a speculative nature (Critchley 1931).

The functional deconditioning that occurs with aging has been a concern of mankind since the very beginning of Egyptian, Greek and Roman history, during which, even though life expectancy at birth was meager (somewhere around 30 years) (Basaraba 2020), survival to what we call today old age was not unusual (Sophocles: 91 years old; Plato: 80 years old; Euripides: 78 years old).

In ancient Egypt, the shortcomings of elderhood were well-known, and the Egyptians were the ones who made considerable efforts to find eternal youth. The medical knowledge of aging which the Egyptians living 2000 years BC had is surprising. They identified the aging phenomenon and secondary changes in this process, the proof being the description of Ptah-Hotep (2400 BC) (Djedkare Isesi Pharaoh's official, who lived during the fifth dynasty of Egypt) of his own aging process (Olatunde Dukuzumurenji 2014, 51):

Lord, Kuwa Wazee [Kiswahili: Elderhood] is upon me, the force of years has come down, frailty is here, and with it decrepitness. Fatigue is a constant companion, blindness has set in, and so has loss of hearing. Slowness of tongue has found me. Dementia has begun its encroachment. Aches and pain assault the whole of the body. The sweetness of health has become the pain of infirmity that which once was delightful has become tasteless. The power of the force of years is in no way good. Breathing has become labored and age is remembered whether one is recumbent or erect.

Classic Greeks notoriously detested elderhood, because it represented the loss of vigor which was so appreciated during youth, as Plato describes the lives of the elderly around him in the first book of the *Republic* (329 a-b):

Some of us who are about the same age often meet together and keep up the old proverb. Now then, when they meet, most of the members of our group lament, longing for the pleasures of youth and reminiscing about sex, about drinking bouts and feasts and all that goes with things of that sort; they take it hard as though they were deprived of something very important and had then lived well but are now not even alive.

The desire to maintain body vigor is indeed showcased in a statement by Diogenes (412/404–323 BC), which contradicts the general understanding that someone should reduce his activity when he reaches old age. He compares himself to the last runner in a relay and wonders: “I know that many people feel that old age is a time to take it easy but I compare my life now to being the last runner in a relay race. Would you have me slow down as I near the finish line?” (bbmquotes.com).

Cicero, considered to be the father of elocution, in the treatise *Cato Maior De Senectute* (44 BC), opposes the common attitude of society members that old men, as they are physically fragile, should refrain from any activities, including those that do not require physical strength:

Ne sint in senectute vires: ne postulantur quidem vires a senectute. Ergo et legibus et institutis vacat aetas nostra muneribus eis quae non possunt sine viribus sustineri. Itaque non modo quod non possumus, sed ne quantum possumus quidem cogimur. At multi ita sunt imbecilli senes, ut nullum officii aut omnino vitae munus exsequi possint. At id quidem non proprium senectutis vitium est, sed commune valetudinis. . . . Resistendum, Laeli et Scipio, senectuti est eiusque vitia diligentia compensanda sunt, pugnandum tamquam contra morbum sic contra senectutem, habenda ratio valetudinis, utendum exercitationibus modicis, tantum cibi et potionis adhibendum, ut reficiantur vires, non opprimantur.

(But, grant that old age is devoid of strength; none is even expected of it. Hence both by law and by custom men of my age are exempt from those public services which cannot be rendered without strength of body. Therefore, we are not only not required to do what we cannot perform, but we are not required to do even as much as we can. Yet, it may be urged, many old men are so feeble that they can perform no function that duty or indeed any position in life demands. True, but that is not peculiar to old age; generally it is a characteristic of ill-health. . . . But it is our duty, my young friends, to resist old age; to compensate for its defects by a watchful care; to fight against it as we would fight against disease; to adopt a regimen of health; to practice moderate exercise; and to take just enough of food and drink to restore our strength and not to overburden it.) (XI, 34–36/42–45)

He is also impressed by the way some individuals remain active and full of vitality until old age, emphasizing the fact that “successful aging” was not common in Antiquity:

Saepe numero admirari soleo cum hoc G. Laelio cum ceterarum rerum tuam excellentem, M. Cato, perfectamque sapientiam, tum vel maxime quod numquam tibi senectutem gravem esse senserim, quae plerisque senibus sic odiosa est, ut onus se Aetna gravius dicant sustinere.

(When conversing with Gaius Laelius here present, I am frequently wont to marvel, Cato, both at your pre-eminent, nay, faultless, wisdom in matters generally, and especially at the fact that, so far as I have been able to see, old age is never burdensome to you, though it is so vexatious to most old men that they declare it to be a load heavier than Aetna.) (II, 4/12, 13)

Titus Lucretius Carus, in the philosophical poem *De Rerum Natura* describes functional deconditioning as being linked to aging, but at the same time considers aging and death as being beneficial, because this makes way for the new generations (Lucretius, *De Rerum Natura*, Book III, ll. 445–458):

*Praeterea gigni pariter cum corpore et una
crescere sentimus pariterque senescere mentem.
nam vel ut infirmo pueri teneroque vagantur
corpore, sic animi sequitur sententia tenvis.
inde ubi robustis adolevit viribus aetas,
consilium quoque maius et auctior est animi vis.
post ubi iam validis quassatum est viribus aevi
corpus et obtusis ceciderunt viribus artus,
claudicat ingenium, delirat lingua, labat mens,
omnia deficiunt atque uno tempore desunt.
ergo dissolui quoque convenit omnem animai
naturam, ceu fumus, in altas aeris auras:
quandoquidem gigni pariter pariterque videmus
crescere et, ut docui, simul aevo fessa fatisci.*

*(Besides we feel that mind to being comes
Along with body, with body grows and ages.
For just as children totter round about
With frames infirm and tender, so there follows
A weakling wisdom in their minds; and then,
Where years have ripened into robust powers,
Counsel is also greater, more increased
The power of mind; thereafter, where already
The body's shattered by master-powers of eld,
And fallen the frame with its enfeebled powers,
Thought hobbles, tongue wanders, and the mind gives way;
All fails, all's lacking at the selfsame time.)*

French biologist Georges-Louis Leclerc, Comte de Buffon, also recognized by Charles Darwin as the first scientist of the modern age to take a scientific approach to evolution in biology, in his work *Histoire Naturelle, générale et particulière*, describes functional deconditioning as related to aging:

Indépendamment des maladies accidentelles qui peuvent arriver à tout âge, & qui dans la vieillesse deviennent plus dangereuses & plus fréquentes, les vieillards sont encore sujets à des infirmités naturelles, qui ne viennent que du dépérissement & de l'affaïssement de toutes les parties de leur corps ; les puissances musculaires perdent leur équilibre, la tête vacille, la main tremble, les jambes sont chancelantes, la sensibilité des nerfs diminuant, les sens deviennent obtus, le toucher même s'émousse. (Buffon 1775, 88)

THEREFORE, THE phenomenon of functional deconditioning secondary to aging, even if not stated as such, has intrigued philosophers and scientists for hundreds of years, as an evolutionary paradox (Fabian and Flatt 2011). Despite this long-standing interest, the attempts of scientists to identify its causes and to counteract them as part of successful aging have appeared only in the 20th century.

The concept of healthy (successful) aging debuted in the 1950s (Pressey and Simcoe 1950; Baker 1959), but the term was introduced in the medical literature by Havighurst (1961), who stated that gerontology was intended to “add years to life” in order to increase the joy and satisfaction of the last years of life; it was only in the late ’80s that John Rowe and Robert Kahn defined this concept using three components: maintenance of a low risk of disease or disability, maintenance of physical and cognitive functionality, strong motivation to live (Rowe and Kahn 1987; Anton et al. 2015).

The recognition that the health of the elderly is best assessed by assessing functional, physical and cognitive capacity, rather than in the context of co-morbidity, came as a major paradigm shift in clinical and epidemiological research over the last three decades (Ferrucci 2008).

Healthy aging is at the heart of the World Health Organization activity, replacing the old concept of active aging, a policy framework developed in 2002 (the decade 2020–2030 being declared the decade of healthy aging). Healthy aging, just like active aging, stresses the need for multi-level activity to enable the elderly to remain a resource for the family and the community. The World Health Organization defines healthy aging “as the process of developing and maintaining functional capacity that allows well-being later in life” (WHO 2020).

Physical activity, alongside cognitive and social activity, is increasingly recognized as a powerful factor in the prevention and treatment of many illnesses, including in the elderly, and a key component of healthy aging. Physical activity is defined as someone’s ability to perform activities which require actions, ranging from self-care (everyday activities) to more complex activities which require a combination of skills, often with a social component or in a social context (Lang et al. 2006; Van Lummel et al. 2015).

Mobility, a component of physical activity, can be defined as the ability to walk safely wherever you want to go, whenever you want to and however you want to get there; mobility refers to movement in all its forms, from transfer from bed to chair, walking for leisure and doing daily tasks, engagement in work and game-related activities, exercise, driving a car and the use of various forms of public transport (Satariano et al. 2012).

Walking and driving cars (88% of the 65–74-year-old category and 69.4% of the 75-year-old category continue to drive) represent the two main forms of mobility for the elderly in the community, although the use of public transport is increasing (Lynott and Figueiredo 2011; Daniel et al. 2013; Hwang et al. 2015).

Mobility is an important factor in maintaining quality of life, which in turn is an independent risk factor for medical complications and even death (Davis et al. 2015; Trombetti et al. 2016; Stubbs, Schofield, and Patchay 2016). Limiting or restricting mobility has important effects on the elderly, such as: reduced access to goods (including food, with impaired nutrition) and services (including health care); disease incidence: obesity, cardiovascular diseases, osteoporosis; cognitive impairment, depression; limited

social activity, which in turn fosters the emergence of new clinical conditions (Musich et al. 2018; Grimmer et al. 2019).

Fries (1980) advanced the idea that as long as fragility and dependence can be the result of loss of physical functionality, physical activity is one of the interventions that can reduce the number of years of dependent life while improving the quality of life of the elderly (Paterson, Jones, and Rice 2007). Increasing the physical activity of the elderly has become an international priority (WHO 1996).

However, the WHO Report published in 2018 shows that indicator 21, namely, the existence of community programs to promote physical activity among the elderly in order to maintain their mental and functional capacity and their independence and to prevent falls, was met by less than half of the member states of the European Union. There are recommendations at national level for physical activity for people over 65 years old, in 21 countries, while for physically weak people and those over 85 years old, in only six countries (Romania is not among them). This is the reality since only two thirds of the 55–69-year-old and three quarters of the over 70-year-old participate rarely or not at all in sports activities (there is no data for the elderly in Romania, but, for example, only 10% of men and 5% of women over 15 years old in our country practice a sport or exercise for pleasure, compared to 45%, respectively 40% in the European Union) (WHO 2018; Eurostat 2020).

Oldness is an adventure. Stepping from the bathtub, hurrying to the phone, or just going down the stairs presents as much risk as traveling camelback in the Gobi. Once we were down the stairs and out the door way ahead of our feet. Now who knows when the trick knee will give out or the foot miss the tread. Once we learned from the fox and the hawk; now the walrus, the tortoise, and the moose in a dark bog are our mentors. The adventure of slowness. (Hillman, 2012, 43)

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Abstract**The Perception of Functional Deconditioning of the Elderly in History**

The aging process, the sum of all progressive physiological changes of the body which lead to senescence and decline in biological functions and its ability to adapt to stress, is a general and inherent phenomenon. Functional deconditioning, although recognized since ancient times, has only started to be explained and tackled during the last hundred years, so that nowadays, the objective of having a successful and healthy aging is a global public health policy. If, until recently, the medical aspect was the most important in defining successful aging, the new concepts relate to the quality of life of the elderly, regardless of whether or not medical conditions are present, and focus on functional independence, both while doing basic activities or complex daily activities.

Keywords

functional deconditioning, aging, healthy aging