

Anti-Aging Medicine Combined with Adequate Axes of Physiotherapy, Nutrition and Psychology would Bring Best-Aging

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Editorial

There was the meaningful book “The Third Wave” published in 1980 by Alvin Toffler [1]. He described three types of societies, based on the concept of waves.

The first wave was agricultural revolution, which came about 10,000 years ago after the Neolithic period. Before that, human race had always fought with hunger, and hunt animals and could sometimes ate meat, bone, visceral organ and bone marrow. These were mainly protein and fat with less carbohydrate. This is why human has only insulin that decreases blood glucose. The population on the earth increased explosively due to much cereal, and people had more carbohydrate and usually worked with sweat.

The second wave was Industrial society. It began in Western Europe with the Industrial Revolution in 18th century. As machines developed more, people tended to work with less physical labor.

The third wave has been information revolution due to prevalence of the computer. During this period, people in developed countries have suffered from obesity and metabolic syndrome due to less exercise and lifestyle.

Currently, we are in the fourth wave, which may be an era of integration and responsibility far beyond [2], and conceptual society. Because of covering almost kinds of work by the computer, only creative people might survive to work in the future. Then, adaptation disorders from various stress would increase in our complex society.

Taking these circumstances into consideration, clinical and medical problems in recent years may be classified into 3 fields. They would be 1) metabolic syndrome in internal medicine, 2) locomotive syndrome with frailty in surgery or orthopedic medicine, 3) stress-induced disorders of young - middle generation and cognitive problem of the aged in psychosomatic medicine, in developed countries.

The author has majored in anti-aging medicine for years with continuing various clinical and research in 3 fields. The useful information and recent new topic would be described in this Editorial.

First axis is physiotherapies. We have investigated masters’ athletes and subjects with type 2 DM (T2DM) and showed the effect of squat training for several months [3,4]. Masters’ athletes with regular lifestyle seem to be the model of anti-aging medicine.

From the point of protective medicine, there are five exercises to protect against disease of aging including squatting, overhead press, deadlift, bench press and pull-up/chin-up [5]. Especially, squatting is a full-body exercise that is the basic movement around which all training should be centered [5].

Furthermore, “stronger for long – a functional training elixir” includes six primal movement patterns with variations/progression [6]. Those are squat, lunge, pull/dead lift/row, push/plank/hover, twist, gait, in which the squat is the most fundamental and valuable [6].

The difference in the effects among sitting, standing and stepping was investigated [7]: sitting-to-stepping showed significant 11% lower BMI, 7.5 cm lower waist circumference, 11% lower 2-h plasma glucose, 14% lower triglycerides, and 0.10 mmol/L higher HDL-cholesterol per 2 h/day.

Recent topic includes body mass-based squat exercise. Starting after 5 min of squatting with moderate intensity, aerobic energy supply has predominantly induced [8].

Heavy back squat training caused significant increase in strength but reduction in flexibility of hamstring muscle group, suggesting the appropriate training protocols [9].

As a new apparatus from Information Communication Technology (ICT), we can evaluate bodyweight squat technique with wearable sensors [10]. Wearable inertial measurement units (IMUs) are small, inexpensive sensors that consist of accelerometers, gyroscopes and magnetometers. It will offer the potential to bridge the gap between laboratory and day-to-day “real-world” acquisition and assessment of human movement.

Second axis is nutrition therapy. The discussion between calorie restriction (CR) and low carbohydrate diet (LCD) has been continued for long years. LCD has been estimated for useful nutritional therapy for weight reduction and decrease of blood glucose [11-16].

Authors and colleagues have started LCD in Japan and studied clinical practice in thousands of cases with remarkable effect for obesity and diabetes [17,18]. Furthermore, we investigated ketone bodies, Morbus (M) value and lipid influences concerning LCD [19-21].

The important point for LCD would be the correct understanding of ketone bodies (KB). Blood KB is elevated in starvation, dehydration and LCD, in which elevated KB would not indicate risky situation pathophysiologically, associated with generating energy and various beneficial effects to human organs [18,22,23].

Third axis is psychosomatic care. It includes management for stress and cognitive disorders for the young and aged people. Author have investigated psychological aspects using anti-aging questionnaire for QOL (AAQOL) and self-esteem for health [24,25]. In the latter research, we clarified that the factors influencing health self-esteem [26]. They are constipation, abdominal fullness, insomnia, age, hypnagogic disorder, fatigue-related symptom, and forgetfulness [26]. Self-efficacy in the aged would be crucial problem from now [27].

In summary, practicing three axes for years would lead to anti-aging medicine. There was an eminent Japanese physician Shigeaki Hinohara, MD, PhD who lived up to 105 years (1911-2017) [28]. He was chairman emeritus of St. Luke's International University and honorary president of St. Luke's International Hospital [29]. He continued 3 axes and developed New Elderly Association (NEA) with the philosophy of best-aging [29-31]. By the Hinohara-ism, we can give adequate treatment with broad various cares to all people and patients how to get best-aging [32].

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