

MARTIAL ARTS AND MODERN HEALTH

Given the increasingly fast-paced lifestyles of people today and the many technological and scientific advances, it is evident that health, or quality of life, implies more than merely freedom from disease. The former limited definition of health originated from earlier times when infectious diseases caused the highest mortality rates.

FIG. 1. Four major infectious diseases accounted for 628 deaths per 100,000 live population in the U.S. in 1900: pneumonia and influenza, tuberculosis, diarrhea and enteritis, and nephritis¹.

With the development of modern sanitation systems, improved public health methods and the discovery of antibiotic medications, nearly all those diseases (with the exception of pneumonia and influenza) have been eliminated from the top ten list of mortality rates. Today's major killers are chronic diseases such as heart disease, cancer and central nervous system vascular lesions.

The World Health Organization (WHO) defined health in 1960 as "A state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity."² One major deficiency in this definition is that it fails to address the state in which health can co-exist with a chronic illness such as diabetes or with a slow progressing disease such as arteriosclerosis. A vast majority of the population falls under a health and disease continuum,³ rather than the state of complete well-being. Even the lives of people with no outwardly detectable symptoms may contain certain unhealthy elements such as stress and tension, drug addiction, or low self-esteem.

Although this definition fails to account for the co-existence of health with disease by its either/or dichotomy, it nevertheless reflects a more modern definition of health. Health is determined by *heredity, environment, and human ecologic interaction*.⁴ Heredity pertains to traits which we have inherited genetically through our parents. Environment refers to our biological and physical surroundings such as the air we breathe and the water we drink in addition to the potentially associated toxins contained in each. Of these three, human ecologic interaction is the only factor which we have the capacity to affect. As we are conscious of our heredity and environment, we may make decisions to behave in ways which could profoundly affect our health.

One health promoting lifestyle which we may choose to pursue is the practice of martial arts. Through its combination of physical, mental and spiritual training, it encompasses what has been defined as the "basic dimensions of health⁵: physical fitness, mental health and spiritual health. For example, Taekwondo, a traditional Korean martial art, constitutes a full health program; "Taekwon denotes the external form of the art, Do connotes the internal essence.⁶ Do can further be defined as the way to "enlightenment, self-realization and understanding⁷, the ultimate goal for martial arts practitioners. Originating from over 2,000 years ago, this particular form of martial art incorporates hand and foot techniques to develop the basic dimensions of health through basic drills, forms (poomse), breaking (kyukpa) and free sparring (kyorugi).

Adams asserts that "The effects of modern life upon man are too complex to expect near perfect function in all dimensions of health, but this level is useful as an ultimate goal to which individuals can aspire, though only rarely achieve."⁸ Similarly, many individuals aspire, but only a few achieve true mastery of martial arts through unification of the mind, body and spirit. Thus, it is evident that not only martial arts and health maintenance are related, but that martial arts provides a unique avenue through which we may strive for complete health..

THE BASIC DIMENSIONS OF HEALTH

Health encompasses an integrated balance of physical, mental, spiritual and social components. Each element serves an essential role, as explained by Edlin and Golanty: Such a view recognizes the interrelatedness of the physical, psychological, emotional, social, spiritual, and environmental factors that contribute to the overall quality of a person's life. No part of the mind, body, or environment is truly separate and independent.⁹ Thus, it is evident that our health is multidimensionally integrated with our environment. As mentioned earlier, the three fundamental dimensions comprising our quality of life are: physical fitness, mental health and spiritual health. In the following pages, each of these determinants will be examined with respect to how martial arts facilitates their enhancement.

FIG. 2. The basic dimensions of health¹⁰.

PHYSICAL FITNESS

Adams defined physical fitness as "...one's ability to perform daily tasks with efficiency (skill), without undue fatigue, and with ample reserve to enjoy vigorous leisure-time activities and to meet unforeseen emergencies."¹¹ Because most people's primary work today is devoid of physical effort, they are more prone to the deleterious effects of prolonged sedentary activity, or hypokinetics. These effects can be most visibly observed in people with chronic diseases such as diabetes or heart disease.

Practicing martial arts improves physical fitness for obvious reasons: its external form provides practitioners with a regular form of physical exercise. This physically active lifestyle will allow a person to achieve higher degrees of performance, protect themselves from injury and improve body composition. Overall, this will lead to a more positive self-image.

Cureton has broken down physical fitness into three components¹²:

- 1) physique
- 2) organic efficiency
- 3) motor fitness

1. PHYSIQUE

This component can be characterized as a height versus weight ratio. This ratio may either facilitate or hinder physical activity. Although it is genetically determined for the most part, one may still have some influence over it through diet and exercise. By maintaining an energy balance or ensuring that one's energy intake matches, rather than exceeds, the energy output, one can prevent the onset of chronic problems associated with obesity such as diabetes, heart disease and hypertension. On the same token, if energy output exceeds energy intake, a person might feel tired and weak due to a deficiency in calories.

Martial arts practitioners may maximize their performance through managing their daily diet. For a 1-2 hour intense training session, carbohydrates provide approximately 67% of the fuel source, fat provides approximately 30% and proteins provide approximately 3%.¹³ Carbohydrates serve as the major direct fuel source for the short-term and medium-term high-intensity exercise experienced in martial arts. As exercise duration exceeds 20-30 minutes, the primary source of glucose for energy production, muscle glycogen, becomes depleted and the body must then resort to blood glucose for fuel. Therefore, if one is engaged in strenuous endurance exercises, it is important to maintain a 30-80g/ hour carbohydrate intake to delay fatigue¹⁴. Although fats are also a direct fuel source, they usually serve as the primary energy source for prolonged low-intensity exercise and thus fat intake is not as significant as carbohydrate intake. Chung and Lee recommend that a martial arts competitor's diet consist of 60% carbohydrates, 30% fat and 10% protein. The following meal-plan is recommended for competitors¹⁵:

- | | |
|--------------|---------------------|
| 1. Breakfast | 25% of daily intake |
| 2. Snack | 10% of daily intake |
| 3. Lunch | 30% of daily intake |
| 4. Snack | 10% of daily intake |
| 5. Dinner | 25% of daily intake |

2. ORGANIC EFFICIENCY

This refers to the quality of organ system function, particularly the muscular, nervous, cardiovascular, respiratory and endocrine systems. Like physique, organic efficiency is dependent on both heredity and on one's own physical activity level. Because physical activity requires the integration of all these systems, a deficiency in one would result in reduced efficiency and physical fitness.

MUSCLAR SYSTEM

If one's muscles are not sufficiently strong enough to allow proper execution of martial arts techniques, physiological damage could be inflicted to weaker areas of the body such as the lower back. In addition, if a person has experienced past injuries, the muscles of their injured areas will also be relatively weaker. This imbalance can also lead to further injury. Therefore, one should ensure that these weaknesses are accounted for while training and that precautionary measures be taken.

NERVOUS SYSTEM

This system serves as the cornerstone to coordination and agility. As imperative as they are to martial arts training in general, these two features also play integral roles in martial arts competition and their presence is imperative for successful performance. Defensive and offensive techniques both require quick responses from the competitor. The practice of martial arts improves the speed of such responses as well as coordination through the unification of the mind and body.

CARDIOVASCULAR SYSTEM

As mentioned earlier, heart disease is one of the three major causes of health-related deaths today. The active lifestyle encouraged by martial arts can reduce the risk of contracting cardiovascular diseases by increasing heart size and strength, stroke volume and blood volume. It also reduces risk factors contributing to cardiovascular disease such as obesity, hypertension and stress.

RESPIRATORY SYSTEM

Respiration, or the utilization of oxygen, is required in the transfer of energy from food molecules to the cells in our bodies. The starting materials are energy-yielding compounds such as glucose and the ending materials are water and carbon dioxide, which is exhaled. The respiratory system and the cardiovascular system are actually physiologically integrated. A person needs an increased level of energy when they exercise, therefore their need for oxygen increases as well as the need for carbon dioxide disposal, to maintain normal blood-acidity levels. Thus, the level of inhaled oxygen, the amount of

oxygen transported to the working tissues by the pumping of the heart, and the uptake by the tissues must all increase as well as the export of carbon dioxide. The enhanced response of the respiratory and cardiovascular systems respond to these needs, which are dependent on the intensity and duration of the exercise. This response can be positively influenced by one's training level, which may explain for the lower degree of fatigue experienced by more advanced martial artists compared to beginners.

ENDOCRINE SYSTEM

An example of health risks associated with the endocrine system is the increased susceptibility for contracting osteoporosis in post-menopausal women due to the decrease in estrogen synthesis. Osteoporosis leads to a high risk in bone fractures due to bone loss. Scientists have demonstrated that physical activity, particularly moderately weight-bearing exercises, can strengthen bones, preventing the onset of the disease.

3. MOTOR FITNESS

This factor is dependent on both physique and organic efficiency as well as six other factors which, when viewed collectively, can account for athletic performance potential¹⁶.

FIG. 3. Components of motor fitness and health-related fitness 17

agility: ability to change direction of the entire body in space with speed and accuracy;

This factor is addressed in sparring, when one must read the environmental cues and immediately and decisively respond. Footwork drills advance its development.

power: the rate at which one can do work; exemplified by activities that demand the production of explosive force

Board breaking makes use of this element by requiring the focused application of undissipated energy, demonstrating not only the physical but the mental aspects of martial arts training.

muscular strength: the maximum amount of force developed in a single muscular contraction

Martial arts addresses this factor through strength training exercises to improve the execution of techniques and to increase the force directed through the technique.

muscular endurance: the capacity of muscle groups to sustain performance; relates to the ability to apply submaximal force repeatedly, or to sustain an isometric muscular contraction for a prolonged period

A necessity for martial arts competitors, this factor is contingent on how adequately the respiratory system delivers oxygen to muscles. Development of muscular endurance can be promoted by extended drills and supplemental exercise such as running sets of sprints and stair running.

flexibility: emphasizes the ability to move the body parts through their full range of motion. It is largely dependent on the suppleness of the muscle, ligament and tendon complex of a joint; This factor is a fundamental prerequisite for martial artists: the greater the range of motion, the greater the power generated. Although no significant difference in flexibility improvements was found between static stretching and ballistic stretching¹⁸, static stretching held for 30 to 60 seconds, is recommended due to the increase of tissue weakening and muscle soreness associated with high-force stretch methods. Furthermore, researchers have shown that elevated temperature (101o to 103 o) enhances the amount of tissue elongation due to low force, long duration stretching. Therefore, one may achieve a better stretch by preceding stretching with 5 to 10 minutes of light exercise to raise muscle temperature.

speed: the ability to perform body movement(s) rapidly;

Power training such as stair running, uphill running, and shadow sparring enhances muscular speed. This is especially important in competition, where speed and power are required for a scoring technique.

balance: the ability to maintain equilibrium via the interrelationship of internal and external forces while stationary (static) or moving (dynamic)

An essential requirement for the proper execution of all techniques, martial arts promotes better balance through

MENTAL HEALTH

As in the description of physical health, mental health does not necessarily refer to the absence of clinically diagnosed emotional disturbances. Anybody may experience mentally unhealthy times in their lives. A college student on academic probation might lose their perception of reality by denying the unpleasant news to him/herself. Unless compensatory action is taken, the student could risk being expelled from college. On the

other hand, good mental health also does not necessarily equate to a complete lack of anxiety or dissatisfaction either. The following is a list of six fundamental characteristics that were found to be deficient in mentally unhealthy people¹⁹:

self-concept: Also referred to as self image, this depends on how one's perception of reality is influenced by environmental input and how one consequently views oneself. These views may be categorized under "personal identity factors". Included among these are self-insight, self-acceptance and self-pity. Someone with a positive self-concept would feel confident about themselves and be able to capitalize on their skills. Meanwhile, they would also recognize their flaws and attempt to address them, although they would not become infatuated with them.

reality perception: People with an unhealthy perception of reality may incorrectly perceive themselves or their environment by confusing what is and what should be. Rather than assessing and responding to the actual situation, they interpret the situation in a manner that agrees with them and then react accordingly. Realistic people accept the facts, regardless of agreement. If a conflict is realized, they seek to resolve it. In reference to the study of Zen in the martial arts, one tries to see a situation for what it is, not what their mind thinks it is.

integration: "A mature, mentally healthy person possesses a unifying outlook on life which permits shaping one's life with wisdom and perspective. Such persons are usually able to cope constructively with numerous routinely adverse problems which might otherwise result in anxiety, frustration, guilt, resentment, and/or hostility."²⁰ A healthy person is able to balance their emotions and refrain from demeaning others when facing adversity. They do not lose perspective of the "big scheme" of things as demonstrated by their deeper understanding of life.

autonomy: Mentally healthy people are able to "function well without making undue demands on others."²¹ They are comfortable making their own decisions while remaining sensitive to their environment. Social disapproval or rejection do not drive their decisions,

though they are able to creatively find a middle ground between what their environment dictates and their needs. Autonomous people achieve a healthy balance between the introspection of their inner-life and their social interactions through which they may enjoy the dynamics of others.

environmental mastery: This involves accepting life for what it is and achieving mastery over it.²² This involves two factors: 1) success 2) creative adjustment to problems. Among the many facets of life which are involved in environmental mastery are: efficiency in problem-solving, success in work, family, recreation, and the ability to contribute to society to the best of one's abilities.

self-actualization: Derived from Maslow's theory of motivation, self-actualization forms the fifth and final level of need in his Hierarchy of Needs.

Needs category	Example of Needs
1. Physiologic	1. homeostatic needs of the body (i.e. food, air, water, sleep and sexual desire)
2. Safety	2. freedom from harm
3. Love and Acceptance	3. through social and physical contact
4. Self-Esteem	4. personal achievement and recognition; a sense of self-worth
5. Self-Actualization	5. opportunity for self-fulfillment and attainment of personal potential

Mental and spiritual health are closely related in martial arts. Achievement of spiritual health will naturally lead to the achievement of mental health or tranquillity. Thus, I will elaborate on the benefits of martial arts on both factors in the following section.

SPIRITUAL HEALTH

"...the deepest purpose of the martial arts is to serve as a vehicle for personal spiritual development" 23 Spirituality may be defined as the search for a deeper and more unifying meaning to life, and not the mere act of survival itself. Zen, a discipline and attitude reflected in, but not restricted to, martial arts, is based on the strength derived from self-reliance and the process of self-improvement²⁴. The successful practice of these deceptively difficult tenets gracefully frees an individual from the previously explained deficiencies observed in mentally unhealthy people by the willful conquest of their own weaknesses.

Zen encourages positive self-concept and autonomy through the attitudes derived from self-reliance. People must be confident in their own abilities in order to depend on themselves. Just as one must know that they will break a board in order to break it, they must also know what their limitations are. Only by capitalizing on one's strengths and acknowledging one's weakness can a person improve him/herself, and thus achieve environmental mastery. For example, instead of wallowing in past conquests ("but I used to be able to...") or aspiring to accomplish something prematurely (the run before walk syndrome), one must live in the present and deal with present challenges with an open mind. "If your mind is open, you are free to be with the flow, to be in rhythm with the timing of change."²⁵ This would combat the problem of reality perception by allowing people to experience or regard a situation for what it is and not for what their mind thinks it is; in other words, by preventing misinterpretation due to over-thinking. In order to maintain an open-mind, one must "diligently improve knowledge and the spirit"²⁶, thus facilitating the integration aspect of a person's mental health.

A martial artist achieves the spiritual serenity that is inherent in spiritual health by developing an intuition which transcends the physical and mental dimensions. However, it is not the serenity itself that holds the greatest importance, but the process through which this intuition was developed. This intuition can be achieved through the dedicated application of oneself to any skill or technique that one may put his/her mind to. "... first

the technique is internalized and 'forgotten', and then one learns to use it. Mastering the technique is mind over body; discipline, hard work, forcing the body to accept the rules and the pain and the utter exhaustion of constant practice, until the body learns."²⁷ By achieving one's personal potential through self-actualization, a person achieves Zen. Such improvement in the quality of life and the ensuing enrichment ultimately qualify the attainment of complete health.

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