



# Part I: Overview

Kung Fu shares many of the same principles as various sciences. When people understand its relation with science, they can have a deeper understanding of Kung Fu and this knowledge is also helpful for practitioners in mastering this art.



# Q



## 1. What is Kung Fu?

# A

Kung Fu is defined as “a primarily unarmed Chinese martial art resembling karate” in the *Oxford English Dictionary*.<sup>1</sup> The term “kung fu” is widely used in Europe, America and other Western countries to refer to Chinese martial arts.

### *The Chinese Meaning of Kung Fu*

In Chinese, Kung Fu refers to any individual accomplishment or skill cultivated through long effort and hard work.<sup>2</sup> Kung Fu is a compound of two characters, “Kung” (功) and “Fu” (夫). The former means achievement, work or merit, and the latter is alternately regarded as a word for “man” or as a suffix relating to a noun. Therefore, the first literal interpretation is “accomplishment of man”, while the second is “work and time or effort”. The connotation of Kung Fu then is of an achievement attained by great effort of time and energy. Colloquially, to say that someone possesses Kung Fu in one area implies one has worked hard for a long time to develop skill in that field. The original meaning of Kung Fu was so broad that it did not necessarily refer to martial arts.

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1. Oxford Dictionaries — Dictionary, Thesaurus, & Grammar, <http://www.oxforddictionaries.com/definition/english/kung-fu>, (accessed 26 February 2011).
  2. Jamieson, John C., and Lin Tao. *An Elementary Chinese Text*. (Chinese University Press, 2002).

However, the term was not used by the Chinese community until the twentieth century.<sup>3</sup> In Chinese, the literal equivalent of “Chinese martial arts” would be “*Zhong Guo Guo Shu*” (中國國術). In practice, however, the term “*Wushu*” is generally acknowledged as being the compound term for all martial arts.

Owing to differences of opinion among various martial arts masters and scholars, there have been many different definitions of *Wushu* over time (see Table 1). The earliest definition of *Wushu* involved boxing routines and the use of weapons; later definitions included attacking and defensive techniques, and later still the meaning came to incorporate exercise and traditional culture. According to the most recent definition,

### ***The Etymology of Wushu***

*Wushu* is formed by two characters: “*Wu*” (武) means martial or military while “*Shu*” (術) translates into method, skill or way. Literally, *Wushu* means martial arts, but to gain a clear understanding of martial arts it is necessary to look at the etymological meaning of *Wu*.

In ancient Chinese, the character “*Wu*” is made up of two parts. The first part means “stop” (止) and the second implies “dagger-axe” (戈), the traditional Chinese weapon. Hence, *Wushu* is a defensive style of combat. However, it is also argued that the image of the character “*Wu*” (武) in original inscriptions on bones and tortoiseshell resembles a person standing or walking with a dagger-axe to fight against an enemy or an animal. Therefore, “*Wu*” could also imply offensive action.

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3. Lorge, Peter Allan, *Chinese Martial Arts: From Antiquity to the Twenty-First Century* (Cambridge University Press, 2012).

*Wushu* is a national sport. Throughout the years, the definition of *Wushu* changed from a military concept to mean an individual's ability to fight against the strong or act as a bodyguard. Now it is seen as a national sport and part of traditional Chinese culture. However, nowadays, all kinds of fighting skills are collectively called Kung Fu.

**Table 1 Different definitions of *Wushu***

Year	Reference	Definition
1932	<i>The National Sports Programme</i>	Chinese martial arts is a traditional physical activity, which offers self-defence skills and serves as a form of physical exercise.
1943	<i>A Declaration on the 50th Anniversary of the Founding of the Central Martial Arts Museum</i>	The national sport of the Chinese people, namely, martial arts, values keeping fit and efficient self-defence.
1957	<i>Various Views on the Nature of Chinese Martial Arts</i>	Martial arts, one of the Chinese national sports, incorporating fitness, attacking and body-building elements, serves to help people keep fit and cultivate minds for the cause of socialism.
1961	Handouts on Chinese martial arts from the College of Sports	Boxing, weapon routines and related exercising methods are all included in Chinese martial arts which is a national sport. As a part of Chinese cultural heritage, it has helped people exercise both the body and the mind ever since its inception.

**Table 1 (continued)**

Year	Reference	Definition
1978	<i>Martial Arts: A General Coursebook for the Department of Sports</i>	Martial arts is based on combat movements like kicking, hitting, wrestling, catching and attacking. It depends on self-contradictory rules, which combine attack and defence, motion and quietness, slowness and speed, gentleness and strength, reality and illusion. And this is where freehand and weapon routines originate from. In the spirit of cultivating people's bodies and minds, Chinese martial arts has developed various combat skills, which is why it is it a national sport.
1982	<i>Sports volume of Macropaedia</i>	Chinese martial arts, also known as one of the Chinese national sports or <i>Wushu</i> , is a traditional Chinese sports activity. It is based on combat movements like kicking, hitting, wrestling, catching and attacking. It depends on self-contradictory rules, which combine attack and defence, motion and quietness, slowness and speed, gentleness and strength, reality and illusion. And this is where freehand and weapon routines originate from. Due to long-term practice by many people, martial arts has become a precious part of Chinese cultural heritage.
1996	<i>A Coursebook on Martial Arts Study for Higher Education</i>	Chinese martial arts focuses on attacking movements, mainly in the form of martial routines, combat and practice. As a traditional Chinese sport, it pays attention to people's internal and external cultivation.

**Table 1 (continued)**

Year	Reference	Definition
1999	Chinese dictionary <i>Cihai</i>	Chinese martial arts, also called martial skills, Kung Fu and known by its former name, Chinese national sport, is based on movements such as kicking, striking, throwing, catching, repelling, and stabbing, all of which follow the laws of motion. Thus, it serves to keep fit and defend oneself.
2005	<i>Modern Chinese Dictionary</i>	Martial arts, skills of boxing and the use of weapons are China's traditional sports.

## 2. How does Kung Fu relate to the sciences?



# Q

Kung Fu has been enhancing national physical fitness and helping soldiers to resist foreign invasions for thousands of years. The endurance of a sport depends on whether it is scientific or not. Kung Fu has its basis in many scientific subjects, such as exercise physiology, sports medicine, psychology, physics and many more. If people understand and apply their knowledge of exercise physiology, sports biology and sports medicine, they can achieve twice the results in Kung Fu with half the effort.

# A

As some of the purposes of Kung Fu are to strike opponents effectively and protect oneself better and more efficiently, it is connected with biomechanics, physiology and even traditional Chinese medicine. Take the movement of the whirlwind kick as an example: practitioners can kick their opponents efficiently if they can perform this movement quickly, and kick high and steadily. In order to kick quicker, higher, and more steadily, they should know how to jump higher and rotate faster, resisting gravity, and thus they should have a knowledge of mechanics. As the force which is used to overcome gravity comes from the body's muscles, one has to master the knowledge of biomechanics too. Furthermore, some kinds of Kung Fu like acupressure (*Dian Xue*, 點穴) are related to human acupoints, so it can be an advantage to study traditional Chinese medicine. Therefore, Chinese martial arts contain numerous aspects of modern science.



### 3. What are the physical benefits of practising Kung Fu?



Kung Fu has become a popular and enduring practice for health and fitness as well as to provide self-defence. It can improve both physical and mental health, enhance the body's nervous system, regulate blood circulation, stimulate the functions of the respiratory organs and the digestive system and thereby make the body less susceptible to diseases.

Regardless of whether one is following the basic training of martial arts, boxing, martial arts using weapons or *Qi Gong* (氣功, see question 33), many of the movements like stretching, jumping, spinning and tumbling provide a good cardio workout, increasing blood circulation and stimulating the metabolism. Many of the movements of Kung Fu combine tension and relaxation which increases the elasticity and strength of cardiac muscles and blood vessels. Some research states that the weight and volume of the hearts of martial arts exponents are larger than those of ordinary people, and their heart rates are less while their heart stroke volumes are much greater. Consequently, practising Kung Fu can lower the energy consumption of the heart, increase the heart's ability to bear intense work and also improve the functioning of the heart's metabolism. Frequent practice of Kung Fu can enhance heart muscle contraction force, vascular elasticity and lung capacity, and thus it increases the blood oxygen supply to the whole body and helps regulate the blood

circulation. Because martial arts is highly intense and dynamic, long-term practice can help develop good blood circulation as it increases the energy expenditure of the limbs and organs of different parts of the body within a unit of time greatly, thereby making higher demands of the blood circulation system. A strong heart and unblocked arteries, veins and capillaries are also important guarantees for the smooth operation of the human metabolism.

Martial arts requires the whole body to work together in synchrony. Not only the arms and legs but also the internal organs all coordinate and work in harmony, which can help strengthen the body's nervous system. This has been proved by the fact that there are many elderly masters of martial arts who still retain their vigour. The nervous system is the hub regulating and controlling all systems and organs in the human body. Martial arts requires exponents to have swift responses and be prompt in their movements. They should execute difficult and complicated movements in good time in rapidly changing conditions. Well-trained practitioners can handle the movements of their bodies skilfully because their nerve centres are finely tuned. That is why many older Kung Fu masters can still act quickly. In addition, some kinds of *Nei Jia boxing* (internal boxing, 內家拳) in Kung Fu can energise the blood supply and actively enhance brain blood circulation, and thus it strengthens the supply capacity of brain cells and makes the brain healthier. Therefore, performing martial arts on a daily basis plays an important role in ensuring the brain's health, forestalling ageing and prolonging life.

The respiratory system can also be enhanced by the practice of Kung Fu. Kung Fu emphasises the close coordination of breathing and action, and many breathing methods have been developed, among which, "sinking your breath to the *Dan Tian* (lower belly, 丹田)", a well-known

abdominal breathing method, has a beneficial effect on cardiopulmonary function. The reason is that, compared with natural breathing, the abdominal breathing method emphasises breathing more deeply, slowly, evenly and softly. Abdominal breathing also helps to loosen the chest and

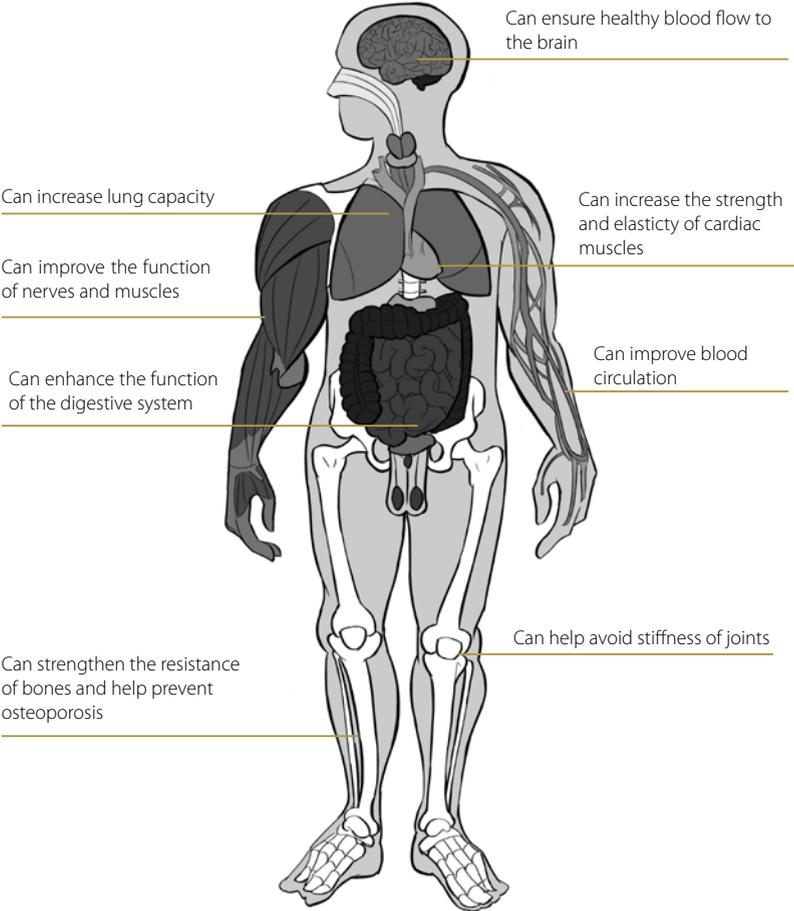


Figure 1. The benefits of Kung Fu on the body

creates good conditions for the lungs to expand, effectively increasing lung capacity and reducing the risk of chronic respiratory diseases.

Kung Fu plays a positive role on the human body's motor system. Kung Fu is a kind of systemic sport. Frequent practice with the right methods actively improves the functions of muscles, bones, joints and ligaments. For example, it can help enhance muscle strength and prevent bones losing calcium and thereby developing osteoporosis. Further, it can even help strengthen the resistance of bones. Also, as it keeps joints lubricant and flexible and increases the extensibility and flexibility of ligaments, it can help avoid stiffness of joints and ligaments as well as the damage resulting from these problems. People who practise Kung Fu for a long time are not only strong and able to exercise their joints freely, but may also do so with a lower risk of osteoporosis, arthritis and chronic lumbago pain symptoms than their peers.

Lastly, Kung Fu can help improve the functioning of the digestive system. By regulating the endocrine system and the nervous system, Kung Fu enhances the functions of the digestive system and the metabolism. Specifically, Kung Fu can help increase the appetite and the secretion of digestive juices, improve the intestinal absorption function and thus promote the absorption of nutriment. Therefore, people who practise Kung Fu extensively are likely to find themselves at a lower risk of gastrointestinal disorder, chronic gastritis and gastric ulcers than others.

In all, Kung Fu can improve the functions of the nervous, cardiovascular, respiratory and digestive systems in the human body. It is also beneficial for bones, muscles and joints. As modern society is becoming increasingly aware of the benefits of fitness routines, more and more people are beginning to learn Kung Fu.