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Revealing the Inheritance of Taijiquan by New Historical Materials in Tang Village, China

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Abstract — The recent discovery of new historical materials, relating to the "Thirteen-Momentum Martial Arts Manual (十三势拳谱)" which were found at Li Helin's (李鹤林) former residence in Tang Village (唐村) in 2019, have deepened our understanding of the incomplete "Song of Practicing Thirteen Momentums (十三势行功歌)" and "Taiji Health-Preservation Martial Arts (HPMA) Manual (太极养生功谱)" which were discovered in the Li Family Genealogy in 2003. It has been found that the contents within these documents agree with the authors of the Taijiquan Classics in the two martial arts manuals discovered by Li Lichao's family in Tang Village, in 2003. The newly discovered information on Wuji HPMA (无极养生功), Taiji HPMA (太极养生功), and their respective practicing postures of thirteen momentums, have proved extremely helpful and it has given us many new clues, which continue to further help us unravel the mystery surrounding the origin of taijiquan. A detailed review of these finds was published earlier in 2023, in this journal, and the purpose of this new paper is to continue to elucidate the content of these historical materials; to explore the development of Tang Village's Wuji and Taiji martial arts, and to identify their impact on the early inheritance of these forms on various taijiquan sects. In this article, through overlaps that are observed in the unique postural characteristics of the thirteen momentums in the respective Wuji HPMA and Taiji HPMA, the historical relationships

between the major taijiquan sects are now revealed.

1. Introduction

The origin and the inheritance of taijiquan has long been the subject of many diverse, and sometimes strongly held opinions. Thus, it has long been the desire of many to conduct an impartial study, in which the research uses source materials, in order to fully elucidate the historical development of taijiquan. This is a crucial task for taijiquan enthusiasts, and this endeavor is not only a tribute to the wisdom of these ancient taijiquan masters, but it is also a commitment to identifying the true authors of the classic treatises behind taijiquan history.

It is well-known that the earliest developments in Chinese martial arts were not recorded in written records. Thus, the inheritance of martial art skills, from the master to his students, was often only through oral tradition and undocumented hands-on instructions.

Due to the limited number of historical documents from this important era, this has inevitably led to many false claims and the creation of myths, such as the foundation stories attributed to Laozi (老子), Han Gongyue (韩拱月), Xu Xuanping (许宣平), Li Daozi (李道子), and many others.¹

The most notable controversy has long revolved around "immortalism", which

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asserts that taijiquan originated from Zhang Sanfeng (张三丰), who was a Daoist priest from Wudang (武当) Mountain², and the theory of "individualism" with the claim in this case being that taijiquan originated from Chen Wangting (陈王庭) of Chen Village in Wen County, Henan Province.³

To explore both the origin and the inheritance of taijiquan, in a comprehensive manner, it is necessary to delve into many different aspects; such as the underlying principles, the techniques that are used by each sect, and to review the postural characteristics. This detailed, in-depth process has recently been helped by the discovery of a large trove of new historical materials from Tang Village that mention the development of both Wuji Health-Preservation Martial Arts (HPMA) and Taiji HPMA, as well as describing their respective practice postures. As can be imagined, these early documents provided many valuable clues for exploration – see specifically “Unraveling the Mystery Surrounding the Origins of Taijiquan by New Historical Materials in Tang Village, China” which was published in 2023, in the second volume of the "Journal of Taiji Science".⁴

In response to this 2023 article and the subsequent requests by many readers for more details, this paper aims to develop further these historical materials, by providing additional details surrounding the development of Wuji and Taiji martial arts at Tang Village's Thousand-Year Temple (千载寺); as well as discussing their important influence on the early transfer of these martial arts to the major taijiquan sects.

It is hoped that this long-needed work will help assist the major taijiquan sects in further understanding their historical relationships, thereby promoting mutual sustainable development of Taijiquan in the future.

2. Prior Perspectives on the Various Taijiquan Sects, the History of the Founders and the History of Taijiquan

Using only the historical literature, the aim of this section is to briefly outline the current perspectives that surround the various

taijiquan sects, regarding the founders, Zhang Sanfeng (张三丰) or Chen Wangting (陈王庭).

2-1. The Uncertain Perspectives of Yang, Wu, Wu-Hao, Sun, and Zhaobao Taijiquan as the Founder of Taijiquan

The earliest written account that we have, regarding the founder of taijiquan, can be traced back to a document called "Preface to Taijiquan" that was written by Li Yiyu (李亦畬), who was a master of Wu-Hao-Style Taijiquan in the sixth year of the Guangxu (光绪) era of the Qing (清) Dynasty (1880). Initially, it was believed that taijiquan was created by Zhang Sanfeng. However, in the seventh year of Guangxu (1881), Li Yiyu revised the "Preface to Taijiquan" to then state: "The founder of taijiquan is unknown".⁵

It wasn't until the spread of Yang-Style Taijiquan from Beijing, which occurred in the year 1912⁴ that people began to pay attention to the complex question surrounding the origin of taijiquan; and the claim that taijiquan originated from Daoist Zhang Sanfeng is still acknowledged by the practitioners of Yang, Wu, Wu-Hao, Sun, and Zhaobao Taijiquan. This gives rise to the related assertion that "taijiquan originated from Wudang."

The statement attributing the creation of taijiquan to Zhang Sanfeng can be found in the earliest published books of the five major taijiquan sects. This includes Li Yiyu's "Taijiquan Manual" in 1881,⁵ as well as Yang-Style practitioner Xu Yusheng's (许禹生) "Illustrated Explanation of Taijiquan Postures" published in 1921,⁶ Wu-Style practitioner Xu Zhiyi's (徐致一) "Brief Discussion on Taijiquan" published in 1927,⁷ Sun-Style founder Sun Lutang's (孙禄堂) "Study of Taijiquan" published in 1919,⁸ and Zhaobao-Style practitioner Du Yuanhua's (杜元化) "Authentic Taijiquan" published in 1935.⁹

However, in none of these books is there any compelling evidence that proves Zhang Sanfeng was the founder. The greatest

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concern is some of the materials that were included in the late 19th to early 20th century books on the history of Taijiquan are merely those legends relating to Zhang Sanfeng and Daoism, which appeared to lack any substantial evidence that relates to the principle of taijiquan's many health benefits and its martial arts proficiency.

In fact, Zhang Sanfeng is a mysterious figure in Daoist history, and his name is surrounded by many folk legends. It is noteworthy that the written records regarding Zhang Sanfeng's whereabouts span a period of 200 years, with different accounts placing his existence during the late Northern Song (宋) Dynasty (the early 12th century), the transition from the late Song Dynasty to the early Yuan (元) Dynasty, the early Yuan Dynasty to early Ming (明) Dynasty period, and from the late Yuan Dynasty to early Ming Dynasty period (which date to the late 14th century). Furthermore, there is substantial controversy in academia regarding Zhang Sanfeng's date of death and even his name.

Through a systematic three-fold examination, encompassing the literature, surviving artifacts, and archaeology, it could be argued that Zhang Sanfeng has no connection to taijiquan¹⁰; and in this review, through data surveys and applying logic analysis to explore the various related issues surrounding the origin of taijiquan, it can now be shown that Zhang Sanfeng was not the founder of taijiquan. Additionally, the formation of Wudang internal martial arts did not occur during the Song, Yuan, or Ming Dynasty, but instead within the early Qing Dynasty.

It is known that the term "internal martial arts" first appeared in the eighth year of the Kangxi (康熙) era (1669) in the epitaph of Wang Zhenan (王征南), a memorial written by Huang Zongyi (黄宗). In addition, the transmission and essential principles of taijiquan postures show clear distinctions from Wudang internal martial arts, indicating that taijiquan did not originate, as a style, under the umbrella of Wudang.¹¹

2-2. The Uncertain Perspectives of Chen-Style Taijiquan on Whether the Founder of Taijiquan Was Chen

Bu or Chen Wangting

Within the early written records on the origin of Chen-Style Taijiquan, the earliest book is "Illustrated Explanation of Chen-Style Taijiquan", which was published in 1919 by Chen Xin (陈鑫), the eighth-generation heir of Chen-Style Taijiquan.¹² In the "Preface" to this book, he introduces the founding process of taijiquan as follows: "In the seventh year of the Hongwu (洪武) era in Ming Dynasty (which dates to 1374), the ancestor named Chen Bu (陈卜), during his agricultural pursuits, engaged in the study of Yin and Yang, opening and closing, guiding the harmonious interplay throughout the entire body. He taught his descendants the principles of digestive nutrition, understanding the essence of Taiji, hence the name Taijiquan. Passed down through thirteen generations to my great-grandfather named Gong Zhao (公兆), adept in both scholarly pursuits and martial arts".

This is the so-called Chen Bu's creation of taijiquan narrative. However, in a later 1928 manuscript, Chen Xin expressed some uncertainty and doubt, and suggested that the Chen family's martial art might have an even longer history: "The origin of Chen family's martial arts is unknown, and there has been taijiquan since the time when the Chen family moved to Wenchang (Changyang Village in Wen County)".

The second book on the origin of Chen-Style Taijiquan is "Chen Family Generational Transmission of Taijiquan Art". This was published in 1932 by Chen Ziming (陈子明), the ninth-generation heir.¹³ Chen Ziming, who studied literature under his uncle Chen Xin, denied the claim that Zhang Sanfeng created taijiquan and he also rejected Chen Xin's narrative of Chen Bu as the founder.

Instead, Chen Ziming adopted Tang Hao's (唐豪) then new discovery, which posited that taijiquan was created by Chen Wangting. Chen Ziming had accompanied Tang Hao from 1930 to 1932, when they conducted various investigations in Chen Village, Henan Province, over a period of several months.

The third book on Chen-Style Taijiquan is DOI: 10.57612/JS24.JTS.03.01

"The Compilation of Chen-Style Taijiquan" published in 1935 by Chen Zhaopi (陈照丕) (this is also known as Chen Jifu (陈绩甫)), the tenth-generation successor of Chen-Style Taijiquan.¹⁴ This book was a collaborative effort, primarily inheriting the theories and practice methods explained by Chen Xin. However, it avoids discussing Chen Xin's "Chen Bu's creation of taijiquan narrative".

The problem is, the stories provided in these three books for the taijiquan creation story, from the inheritors of Chen-Style Taijiquan, do not provide a unified perspective, nor do they provide any verifiable source materials, which would support their respective claims.

The claim that Chen Wangting was the founder was vigorously promoted by Tang Hao in his book "Roots of Taijiquan", which was published in 1935 after visiting Chen Village.¹⁵ On reviewing the book, Tang Hao's argument rests on three points: (1) The Chen family in Chen Village had been passing down martial arts from Chen Wangting's time; (2) Many individuals in the "Chen family genealogy" after Chen Wangting were labeled as "martial artists" or "boxers"; and (3) A verse in the Chen family genealogy mentions Chen Wangting as "when idle, he practiced martial arts; when busy, he cultivated the fields".

While Tang Hao's rejection of Zhang Sanfeng's creation story is commendable, his subsequent argument for Chen Wangting being the founder appears hasty; and the evidence is lacking.

In fact, Tang Hao's publications sparked a dispute within the Chinese martial arts community regarding the taijiquan creation stories of Zhang Sanfeng and Chen Wangting; and over subsequent years there has been a plethora of debates, with a significant number of the articles refuting the claim about Chen Wangting being the founder of taijiquan.¹⁶

Ultimately in August 2007, the authoritative Chinese national martial arts department officially made the decision to designate Chen Village in Wen County, Henan Province, as the "Place of Origin of Taijiquan

Martial Arts". Thus, there then became two potential claims for the origin of taijiquan: (1) the officially recognized Chen Village narrative and (2) the widely influential narrative that states Zhang Sanfeng was the founder. However, again, the evidence for both sides could not be fully substantiated, with supporters on each side pointing out many clear flaws in the opposing arguments, but none could provide any conclusive resolution to the problem.

3. Tang Village's New Historical Materials as Evidence for Clarifying the Origin of Inheritance of Taijiquan

Approaching the historical research on the origin of taijiquan from a more rigorous academic standpoint requires reliance on tangible, authentic material evidence, with the items traced and it also verified that they had been passed down through history. This can be through the use of manuals, diagrams, historical artifacts, and other document-ary evidence. When these documents can be verified, these documents constitute the closest we can come to the "real past" and only by presenting reliable material evidence can we establish credibility, while still remaining cautious about the various verified and other unverified claims.

As already stated, the early records of taijiquan inheritance are limited. Thus, it is fortunate that the recent discoveries in Tang Village, Bo'ai County, Henan Province, has provided us with many new, researchable materials. These are preserved in family genealogy, inscriptions, and two sets of hand-copied manuals that had been passed down through many generations of masters and disciples.

Through meticulous comparative research, on these newly discovered materials, we can now finally trace the historical development of taijiquan, unravel its original creation and determine its subsequent inheritance through various generations and through various taijiquan sects.

3-1. Three Precious Genealogy

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Documents and Manuals from Tang Village

The valuable historical materials from Tang Village in Bo'ai County have brought forth several important insights. First, the 2003 discovery of the "Li Family Genealogy (李氏家谱)" has shed light on three previously unresolved historical issues in academia: Li Yan's (李岩) background, the origin of taijiquan, and the migration route from Hongdong (洪洞).⁴

Within the Preface to the Li Family Genealogy, the scribe records that "The eighth-generation ancestor Li Chunmao (李春茂) (who used the nickname Li Yezhen (李叶蓁)) passed the imperial examination and he studied under Abbot Bogong (博公道长) at the Thousand-Year Temple (千载寺), Three Sages Gate (三圣门), and Taiji Palace (太极宫). He learned martial arts and swordsmanship, he observed astrology, he studied military strategies, he promoted the unity of the three religions, and he debated the Wuji HPMA and Thirteen-Momentum martial arts. He also created the art of spear and was renowned for his divine skills. He traveled to teach and spread martial arts in several provinces including Shanxi, Shandong, Shaanxi, Zhejiang, Hunan, and Guangdong, and was very well known".

It further records that "The ninth-generation ancestors, Li Zhong (李仲) and Li Yan, joined with their cousin Chen Wangting (who was also known as Chen Zouting (陈奏庭)) of Chen Village to become sworn brothers at the Taiji Gate. They established a legacy of martial and literary excellence and created the Taiji HPMA. They also practiced the inherited Wuji martial arts, Thirteen-Momentum martial arts, and Tongbei (通臂) martial arts". They achieved success in civil examinations, were enticed into bandit camps, demonstrated wisdom and valor, and shook their enemies with their might".

Additionally, the seventh section of the "Li Family Genealogy" includes three crucial martial arts documents: Wuji Health-Preserving Boxing Treatise (无极养生拳论), Song of Practicing Thirteen Momentums (十三势行功歌), and Taiji HPMA Manual (太

极养生功谱).

Another historically significant find from Tang Village is a collection of martial arts manuals, including two similar manuscripts discovered in 2003 at Li Lichao's (李立朝) home in Tang Village and the "Thirteen-Momentum Martial Arts Manual (十三势拳谱)" found in 2019 at the home of Li Qunfeng (李群峰), the great-grandson of the former owner of the residence, Li Helin. Many essential principles in current Taijiquan Classics are derived from these Tang Village martial arts manuals.

Furthermore, Tang Village uncovered some valuable stone inscriptions related to Wuji and Taiji martial arts, such as the Ten Powers of Tang Monk Stele (唐僧十力传碑) and the Merit Stele of Hongdong Migrants Giving Alms (舍善洪洞移民功德碑) at the Thousand-Year Temple. The brief verification and analysis of these new historical materials from Tang Village was recently published in the article entitled: "Unraveling the Mystery Surrounding the Origins of Taijiquan by New Historical Materials in Tang Village, China".⁴

It is now clear from these documents that the formation of taijiquan was not through one single astute martial artist, nor was it completed within a few short years. Instead it involved a slow comprehensive, long-term development and to understand its complete history it will be required to examine and elucidate the martial arts culture formation, and its evolution in Tang Village's Thousand-Year Temple Complex, which includes the Thousand-Year Temple, Three Sages Gate, and Taiji Palace.

The manuscript of "Thirteen-Momentum Martial Arts Manual" discovered at Li Qunfeng's home is very rich in content, combining history and philosophy, theory, and numerous vivid illustrations, making it a comprehensive work, and worthy of serving as one of the most important "historical records" of martial arts literature.

Being able to clarify the development of the Thirteen Momentums of Wuji HPMA, from the Han (汉) Dynasty to the Tang Dynasty

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and the historical expansion of martial arts in the Ming and Qing eras which constitute the majority of developmental history of taijiquan, these new historical materials fill in much of the historical content that has previously been lacking in earlier studies into the origin and the inheritance of taijiquan.

3-2. An Explanation of “The Thirteen-Momentum Martial Arts Manual” from Tang Village

In reviewing the new historical materials of the "Thirteen-Momentum Martial Arts Manual" discovered in formal residence of Li Helin in Tang Village in 2019, the first part comprises the missing "Taiji HPMA Manual (太极养生功谱)" from the "Li Family Genealogy". The details surrounding the contents and the first- and last-page images of the first part have been discussed and reviewed in our prior article.⁴ Thus, the purpose of this paper is to supplement the explanation of the 34 chapters within the “Second Part” of Thirteen-Momentum Martial Arts Manual.

3-2.1. Sections 1 to 11 of the Second Part of “The Thirteen-Momentum Martial Arts Manual” from Tang Village

The second part of the "Thirteen-Momentum Martial Arts Manual", encompassing Sections 1 to 11, include: (1) Diagrams of Wuji and Taiji; (2) The Book of Luo and a Diagram of the Yellow River (洛书·河图); (3) Diagram of Three Powers and the Relationship of Heaven, Earth and Humanity; (4) Pre-Heaven Eight Trigrams and Thirteen-Momentum Routine; (5) Pan Gu Axe Stele and the Myth of Fuxi and Nüwa (盘古斧碑·伏羲女娲典故); (6) The Classic of the Dao Explained by Master Yin Shouzi (尹寿子); (7) Han Dynasty Image of Li Ziran (李自然) and Couplet Crossing the River; (8) Emperor Wu (汉武帝) of Han's Posthumous Decree of Family Name to Master Li Ziran; (9) Memorial Stele for Master Li Ziran by Eastern Han Dynasty Physician Dongfang Shuo (东方朔); (10) Memorial Stele form Master Li Ziran by General Zhang Guofan (张国藩); and (11)

Daoist Guiding Techniques of Li Ziran.

These contents, when combined with other inscriptions from Thousand-Year Temple, reveal three distinctive cultural elements: (1) the culture of Wuji health preservation, (2) the culture of the I-Ching (Book of Changes (易经)), and (3) the integration of Buddhism, Daoism, and Confucianism.¹⁷

Yin Shouzi is a legendary figure in ancient Chinese Daoism, and he is said to have expounded the Dao De Jing (or the Dao of Power (道德经)) during the reign of Emperor Yu Shun (虞舜). He studied the "Way of Wuji" in Quanhui (覃怀) (now in Qinyang (沁阳) City in Wen County, Henan Province) and he was revered by Laozi (老子) as his master. Thus, the Thousand-Year Temple has been praised as the "Hometown of Wuji" and the "Land of Wuji" since the Eastern Wei (东魏) period.¹⁸ Li Ziran, from the Western Han period, was a master of Wuji health preservation in Taiji Palace of Thousand-Year Temple and the Wanshou Temple (万寿观) on Golden Umbrella Mountain. Because he once taught Emperor Wu of the Han Dynasty the way of health preservation, he was granted the surname Liu and became known as Liu Ziran.¹⁷

The first page inside the cover of Tang Village's "Thirteen-Momentum Martial Arts Manual" bears the thoughtful inscription "Don't Claim to Be a Disciple until You Have Achieved Success (未成功器、勿名师门)" (the image of this sentence can be found in Reference 4), and it corresponds to the inscription recorded in a rubbing of the Ten Powers of Tang Monk Stele, which was discovered in Tang Village.

This is one of the five precepts proposed by Master Li Daozi (Monk Shili (十力和尚)) of the Thousand-Year Temple, who served as the abbot during the Tang Dynasty. Disciples are required not to casually disclose their martial arts lineage and heritage when they have not achieved a level of success. Since then, this humble principle of "Don't Claim to Be a Disciple until You Have Achieved Success" has become a martial arts code at the Thousand-Year Temple, and has established a tradition of self-discipline,

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humility, and careful discretion, eschewing the pursuit of empty fame. It is perhaps for this reason that Wuji HPMA, characterized by yielding to overcome strong force and self-sacrifice for the sake of others (以柔克刚、舍己从人), did not spread widely, before the Ming Dynasty.

Looking at the "Merit Stele of Hongdong Migrants Giving Alms", which was carved in the 22nd year of the Wanli (万历) reign in the Ming Dynasty (1594), the inscription contains about 400 words that vividly recalls the great merits of the monks who were led by the "Daoist masters who gave up meals, transmitted martial arts for health preservation, and accumulated profound virtues". From these words, it is evident that the Thousand-Year Temple was already known as a temple that was renowned for its martial arts, in which the practice of "transmitting martial arts" and "preserving health" were closely linked. During the same period, the book "New Treatise on Military Efficiency (纪效新书)" which was written by Qi Jiguang (戚继光) in 1560, it is recorded that there were 16 styles of martial arts. Although the name "Taiji HPMA" did not appear in 1594, the Thousand-Year Temple's martial arts had gained a considerable reputation by the end of the Ming Dynasty, and it had attracted many young individuals to learn martial arts at the temple.

3-2.2. Sections 12 to 18 of the Second Part of "The Thirteen-Momentum Martial Arts Manual" from Tang Village

Within sections 12 to 18 of Part Two of the "Thirteen-Momentum Martial Arts Manual" the focus is primarily on the achievements of Li Chunmao. The titles of the seven sections are: (12) Diagram of Cultivation Routine of Wuji HPMA by Li Chunmao; (13) Diagram of Eight Trigrams of Thirteen-Momentums for Wuji Health Preserving by Li Chunmao; (14) Wuji Health Preserving Boxing Treatise by Li Yezhen; (15) Thirteen-Momentum Treatise by Li Chunmao; (16) Song of Practicing Thirteen Momentums by Li Chunmao; (17) Postures of Wuji Thirteen

Momentums by Li Yezhen; and (18) Diagram of Wuji Thirteen-Momentum Routine.

From the contents within this section, it can be proven that the martial arts heritage of the Thousand-Year Temple continued well into the late Ming Dynasty. Li Chunmao, based on the Wuji HPMA passed down his knowledge through generations at Thousand-Year Temple, and further theorized and organized them. He created works such as "Wuji Health-Preserving Boxing Treatise", "Thirteen-Momentum Treatise", "Song of Practicing Thirteen Momentums", and the martial arts routines of "Wuji HPMA", as well as the essential techniques of the Divine Spear Three Methods.

The "Li Family Genealogy" also records Li Chunmao as being a practitioner of "genuine martial arts". He practiced Wuji martial arts, the Thirteen-Momentum martial arts, swordsmanship, spear techniques, archery, and he was renowned for his extraordinary skills. He propagated the principles of the Three Doctrines, taught martial arts in the provinces of Shanxi, Shandong, Shaanxi, Zhejiang, Hunan, and Guangdong, excelled in observing celestial phenomena, interpreted the Eight Trigrams, and was known as a martial arts master of the Three Doctrines and he was a distinguished scholar in martial arts.

Li Chunmao's writings clearly show there was a focus on health preservation and the application of martial arts. The "Wuji Health-Preserving Boxing Treatise" discusses the principles of Wuji HPMA, the "Song of Practicing Thirteen Momentums" elucidates the concepts of practice for the Thirteen Momentums, and the "Thirteen-Momentum Treatise" discusses the methods of practice. These three articles complement each other closely, providing a historical and cultural foundation for the creation of "Taiji HPMA" by Li Zhong (李仲), Li Yan, and Chen Wangting.

3-2.3. Sections 19 to 22 of the Second Part of "The Thirteen-Momentum Martial Arts Manual" from Tang

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Fig. 1. Front Page of Table of Contents for the Thirteen-Momentum Martial Arts Manual (all images presented in this article by courtesy of Mr. Li Libing (李立炳)).

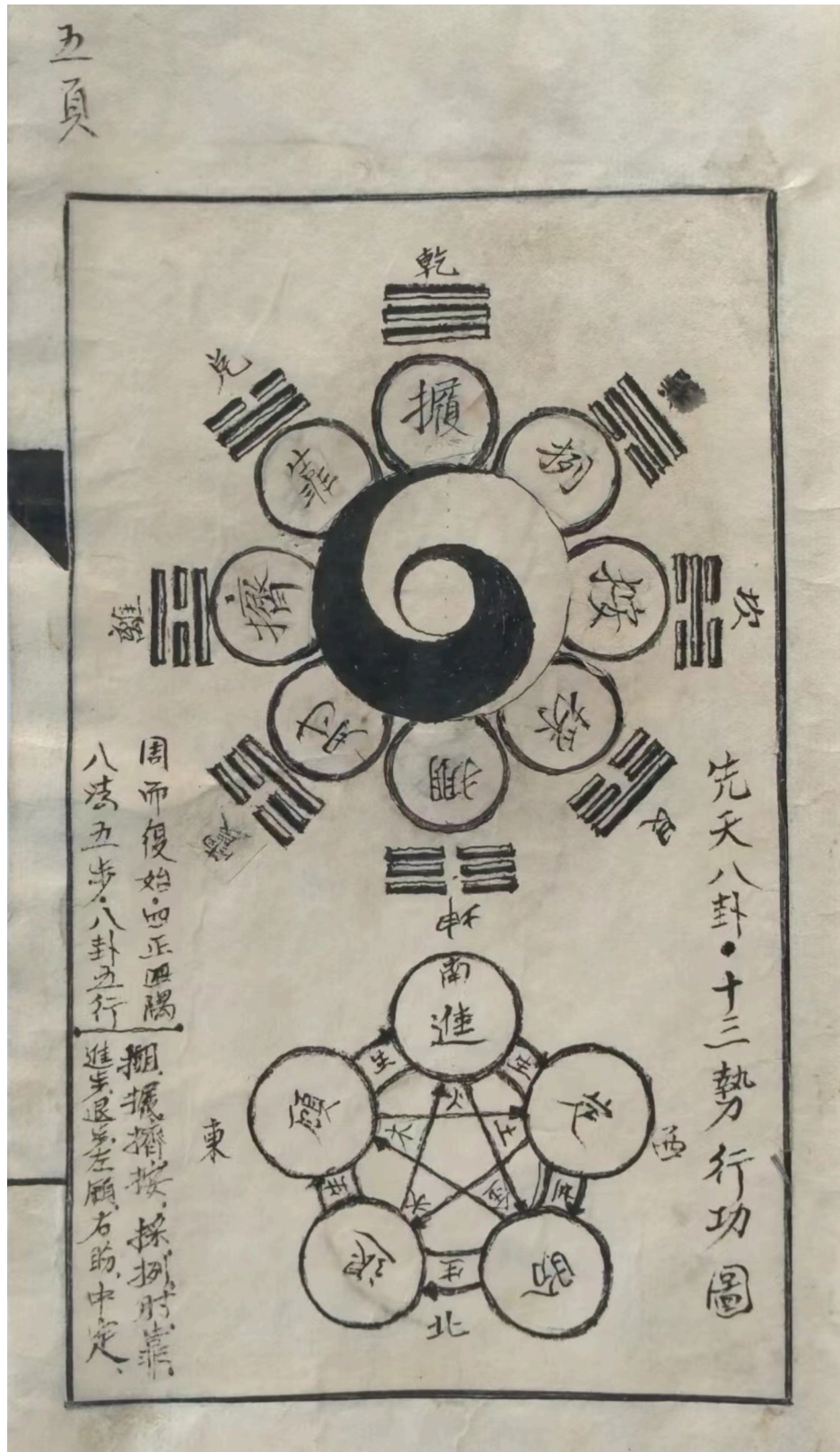


Fig. 2. Pre-Heaven Eight Trigrams and Thirteen-Momentum Routine.

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Fig. 3. Second Page of Table of Contents for the Thirteen-Momentum Martial Arts Manual.



Fig. 4 - Illustration of Li Chunmao Demonstrating the Practice of Wuji HPMA.

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Fig. 5. - Diagram of Eight Trigrams of Thirteen-Momentums for Wuji Health Preserving by Li Chunmao.

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二十三	李鶴林拳法行功畫像		四十九

Fig. 6. Thirteen Momentums: Catalog of Martial Arts Manual, Page Three.

Village

Within Sections 19 to 22 of Part Two of the "Thirteen-Momentum Martial Arts Manual", the focus is primarily on the achievements of Li Zhong, Li Yan, and Chen Wangting. These sections include: (19) Illustration of Li Zhong's Martial Arts Practice; (20) Long Boxing Also Known as Thirteen Momentums; (21) Expositions of Insights into the Practice of the Thirteen Momentums by Li Zhong (十三势行功心解); and (22) Postures of Thirteen Momentums of Taiji HPMA by Li Zhong, Li Yan, and Chen Wangting. The three cousins who learned various martial arts at Taiji Palace, including Wuji HPMA, Thirteen Momentums, Tongbei (通臂) boxing, Eight Techniques of Thousand-Year Temple (千载八势), and Xinyi Liuhe boxing (心意六合拳).

One key result from the contents within the "Taiji HPMA Manual" (in the first part of the "Thirteen-Momentum Martial Arts Manual") is that the name "Taiji HPMA" did originate from Wuji HPMA, which is also known as "Wuji Boxing". This fact was also mentioned in the "Li Family Genealogy".

Naming it as "Taiji HPMA" might also be attributed to the comprehension of Li Zhong, Li Yan, and Chen Wangting in the "Taiji Palace", based on Li Chunmao's "Wuji Health-Preserving Boxing Treatise". It is further attributed to elucidating the martial training from Wuji to Taiji and integrating the effects of internal cultivation and external movement by subsequently merging Wuji and Taiji.

The Taiji HPMA Manual is an important document. It includes ten chapters. These chapters being: "Preface, Sacred Origins, Martial Arts Principles, Martial Arts Naming, Martial Arts Execution, Body Positions, Martial Arts Foundation, Internal Cultivation, External Defense, and Martial Arts Treatises". Each chapter consists of an eight-line pentameter verse.

Within our preceding article⁴, we outlined the contents of nine of the chapters of the "Taiji HPMA Manual",⁴ but we did not include the tenth chapter "Martial Arts Treatise" this

being the "Discourse on Power Cultivation". The tenth chapter is now supplemented here:

"Taiji HPMA, cultivating internally and defending externally; Long boxing with thirteen momentums, the more you practice, the more refined your skills become; Preserving the health for longevity, mastering techniques for self-defense; Invincible like a hero, enduring through the ages".

This represents the genuine purpose of Li Zhong, Li Yan, and Chen Wangting in cultivating power and transmitting martial arts.

3-2.4. Sections 23 to 26 of the Second Part of "The Thirteen-Momentum Martial Arts Manual" from Tang Village

In Sections 23 to 26 of Part Two of the "Thirteen-Momentum Martial Arts Manual", the focus shifts to the achievements of Li Helin. These sections include: (23) Illustration of Li Helin's Martial Arts Practice; (24) Taijiquan Treatise (太极拳论) by Li Helin; (25) Song of Push Hands (打手歌) by Li Helin; and (26) Essentials of Push Hands (打手要言) by Li Helin.

Li Helin, who belonged to the twelfth generation of the Li family, was the great-grandson of Li Yan and he was born in the fifty-fifth year of the Kangxi era (1716). He became the consolidator of Taiji martial arts theory and practice. His "Taijiquan Treatise" is a unique creation that combines the historical experiences of Taiji HPMA with personal insights from his martial arts practices. Concerning its history, the "Thirteen-Momentum Martial Arts Manual" was discovered in 2019 at the residence of Li Helin's great-grandson Li Qunfeng. The preceding article published in 2023⁴ also mentioned that, according to the record in "The Origin and Development of Wangbao Spear (王堡枪源流)", Wang Anmin (王安民), a successor of the Six Harmonies Spear from Wangbao (王堡六合枪), and his senior disciple, Chang Naizhou (苋乃周), along with their junior Wang Lincang (王霖苍), all

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studied under Li Helin. The 2023 article also detailed that Wang Zongyue (王宗岳) was also a student of Li Helin.⁴ Therefore, the origin of the name "Taijiquan" likely started with Li Helin's "Taijiquan Treatise".

3-2.5. Sections 27 to 34 of the Second Part of "The Thirteen-Momentum Martial Arts Manual" from Tang Village

The final part, Sections 27 to 34 of Part Two of the "Thirteen-Momentum Martial Arts Manual", focus primarily on martial arts weapons and further demonstrate the applications of martial arts combined with health preservation. These sections include: (27) Spring and Autumn Knife Secrets Recorded by Li Ruchun (李如椿); (28) Song of Divine Spear by Li Helin; (29) Song of Practicing Thirteen-Momentum Sword by Li Rusong (李如松); (30) Thirteen-Momentum Pole Techniques by Li Rusong; (31) Thirteen-Momentum Saber Techniques by Li Rusong; (32) Four Spear and Pole Techniques by Li Rusong; (33) Saber Techniques by Li Rusong; and (34) Martial Arts of Tang Village.

Both Li Ruchun and Li Rusong are from the 11th generation of the Li family. Thus both received instruction in Wuji martial arts, Thirteen-Momentum martial arts, swordsmanship, spear techniques, Taiji HPMA, and much more from Li Zhong. They, in turn, then passed these teachings to Li Helin, who was the second son of Li Ruchun. Li Rusong, who was also known as Senior Dao of Taihang (太行老道), was born in the seventh year of the Kangxi reign (in the year 1668). In his youth, he studied Dao at the Thousand-Year Temple. After becoming a master, he resided near Tang Village at Wanshou Temple on Golden Umbrella Mountain. He was a renowned martial artist, and his skills in both boxing techniques and spear techniques were famous on both banks of the Yellow River.

According to the inscriptions on a stele found at Wanshou Temple on Golden Umbrella Mountain, in the first year of the Yongzheng (雍正) reign (1723), Senior Dao of Taihang,

Li Rusong, created the "Eight Methods, Five Steps", and transformed them into martial arts movements. He authored the book "Eight Methods, Five Steps, the Natural Way of Daoism (八法五步、道法自然)".

As mentioned in the preceding article published in 2023,⁴ Li Rusong intricately coordinated the myriad variations of body movement in the six degrees of freedom in three-dimensional space. This was achieved through eight hand momentums (ward-off, roll-back, press, push, pull-down, split, elbow strike, shoulder strike) and five-foot momentums (advance, retreat, look left, look right, central equilibrium). The dynamic momentums as coordinated through the body kinetic chain was integrated with Tang Village's series of Wuji HPMA, Taiji HPMA, and weaponry training.⁴

Section 34 on teaching of martial arts documents four martial arts halls: Xinyi Hall (心意堂), Hengxin Hall (恒心堂), Qunying Hall (群英堂), and Longxing Hall (隆兴堂). It also lists three martial arts schools: Taiji Palace, Three Sages Temple, and Thousand-Year Temple. At that time, the inheritance and dissemination of martial arts were flourishing within Tang Village, and various different martial arts were taught in the three schools. The Thousand-Year Temple transmitted the Thousand-Year Eight Techniques, Three Sages Temple transmitted Xinyi boxing (心意拳), which is also known as the Liuhe boxing (六合拳), and Taiji Palace transmitted the Thirteen-Momentum martial arts. Section 34 also records the previous mentioned training rule of "Don't Claim to Be a Disciple until You Have Achieved Success", which as we noted earlier was probably the main reason why Tang Village's martial arts were not widely known in China, and thus difficult for historians to trace.

3-2.6. Highlights of Wuji HPMA and Taiji HPMA in Tang Village's "Thirteen-Momentum Martial Arts Manual"

In summary, the discovery of the "Wuji HPMA" and "Taiji HPMA" practice sets,

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Fig. 7. Portrait of Li Zhong Demonstrating Martial Arts.

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Fig. 8. Portrait of Li Helin Demonstrating Martial Arts.

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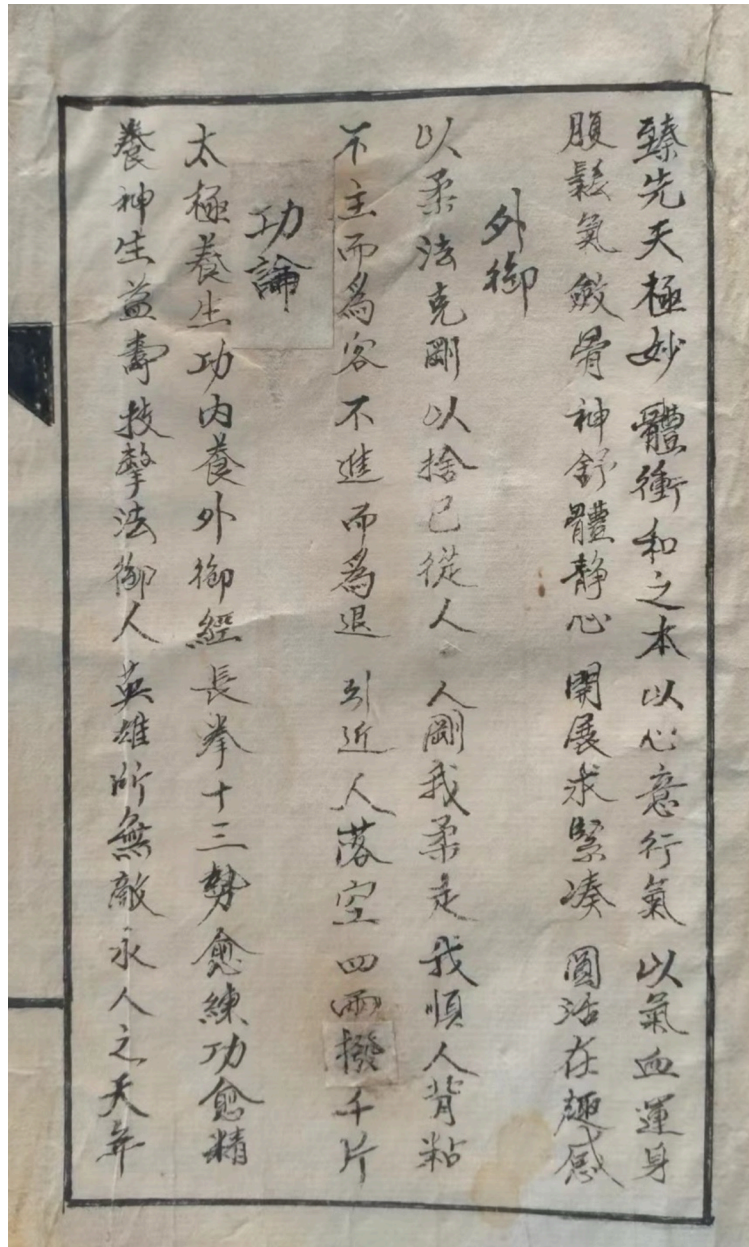


Fig. 9. Taiji HPMA Manual: Chapters of "External Defense" and "Discourse on Power Cultivation" (Collaboratively Authored by Li Zhong, Li Yan, and Chen Wangting in 1634).

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Fig. 10. Catalog of Thirteen-Momentum Martial Arts Manual, Page Four.

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Fig. 11. Catalog of Thirteen-Momentum Martial Arts Manual, Page Five.

with their vivid illustrations in the Tang Village's "Thirteen-Momentum Martial Arts Manual" reveals many clues that can help solve the origin and the inheritance of the taijiquan sects. The principles of these two practices are similar, and appear to be based on the Daoist philosophy of the unity of Yin and Yang, the harmony of heaven and man, the Daoist practice of cultivating both nature and life, following the principles of natural Dao; and the health wisdom of the "Esoteric Scripture of the Yellow Emperor (黄帝内经)". They also emphasize tranquility, emptiness, and the cultivation of genuine energy.

Accordingly, the emphasis in the two practices are well-defined, yet remain harmonious in their differences. The common health preservation objectives of the two sets of practices are succinctly summarized in Li Chunmao's "Song of Practicing Thirteen Momentums" as "Carefully deduce the ultimate purpose for promoting longevity, delaying aging, staying young (详推用意终何在、益寿延年不老春)". The key points of their respective practices are outlined as follows:

The focus of the "Thirteen Momentums of Wuji HPMA" lies in developing unity through stillness, embracing the origin to maintain oneness, embodying formless-ness, and cultivating a mind as calm as water.

When practicing Wuji HPMA, attention is often directed to the Dantian (丹田), and internal focus on a relaxed abdomen with a continuous flow of circular and arcing motions, emphasizing both large and small circles. This reflects the essence of Wuji power, where tranquility is maintained amid movement, and the practice showcases a "mystical" transformation, in response to the opponent's changes.

The focus of the "Thirteen Momentums of Taiji HPMA" lies in differentiation through movement, creating continuous connection between body sections, bends and stretches, and rapid appearances and disappearances. When practicing Taiji HPMA, the process is said to emphasize an internal cultivation of

vitality, while externally demonstrating tranquility, stepping like a cat, and exerting forces like pulling silk.

In this there is a clear distinction between real and virtual, folding and transforming, free expansion and contraction, and the fluid interplay of disconnection and reconnection between parties. This embodies the core principle of Taiji power, which is characterized by the principles of initiation, continuation, transition, and completion, as well as the unity of the entire body, the harmony of Yin and Yang, and the use of softness to overcome hardness.

4. The Influence of Tang Village Martial Arts on the Inheritance of Various Taijiquan Sects

Within the "Thirteen-Momentum Martial Arts Manual", the martial arts at the Thousand-Year Temple in Tang Village can be broadly categorized into four main parts: (1) Li Chunmao's Wuji HPMA series; (2) Taiji HPMA series of Li Zhong, Li Yan, and Chen Wangting; (3) Li Helin's taijiquan series; and (4) Martial weapon techniques.

The third series is the Taijiquan Treatise, which was perfected in 1787 by Li Helin; and it forms a foundation based on the first series "Wuji HPMA" and the second series "Taiji HPMA". Taiji HPMA is derived from Wuji HPMA.

As mentioned in the preceding article published last year, in 2023,⁴ the 58 postures of the Thirteen Momentums for Taiji HPMA were developed and practiced by Li Zhong, Li Yan, and Chen Wangting. They referred to the structure of the Wuji HPMA, and they incorporated techniques from Qi Jiguang's 32-posture long boxing, the eight techniques of the Thousand-Year Temple, Tongbei boxing, Xinyi Liuhe boxing, and spear skills.

More specifically, some of the postures derived from Eight Techniques of the Thousand-Year Temple, such as "Vajra Pounds Mortar". Some came from Xinyi Liuhe boxing, like the "Hidden Hand Elbow Strike"; while others were inspired by Li

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Chunmao's Wuji HPMA, such as "White Crane Spreads Wings", "Brush Knee and Twist Step", "Wild Horse Parts Mane", "Fair Lady Works at Shuttle", "Strike to Groin with Fist", "High Pat on Horse", "Spreads Arms to Strike", "Cloud Hands", "Step Forward to Seven Stars", and many more which would be too long to list. Certain postures originated from Tongbei boxing and likewise some from the set of 32 postures of the "New Treatise on Military Efficiency" - such as the "Lazily Pull up the Robe" and "Sparrow on the Ground Turning into a Dragon".^{19, 20}

Over time, during the Ming Dynasty, the Li family in Tang Village transmitted the Wuji and Taiji Thirteen-Momentum martial arts to several provinces, including Shanxi, Shandong, Shaanxi, Zhejiang, Hunan, and Guangdong. However, due to historical factors such as the complex transition from the Ming Dynasty to Qing Dynasty, and the active involvement of members of the Li family in peasant uprisings, and the suppression of martial arts that occurred within the Qing Dynasty; the Tang Village martial arts nearly became lost to history. For these reasons, only a partial lineage remains in the vicinity of Tang Village in Boai County, Henan Province.

Fortunately, the martial arts of Thousand-Year Temple in Tang Village, which was brought back by Chen Wangting to Chen Village, did continue to be passed down, and Yang Luchan (杨禄禅) became the first to take taijiquan out of these remote villages, and to spread it first to Beijing and then beyond. This had a huge contribution to increasing its popularity of taijiquan. Thus, the advancement of the martial arts of Tang Village has been attributed to both the Chen family and the Yang family.

With the history behind taijiquan now developed, the following section now explores the inheritance of thirteen-momentums postures from both Wuji HPMA and Taiji HPMA, as documented in the "Thirteen-Momentum Martial Arts Manual". Here, the aim is to trace the historical trajectory of the martial arts lineage of Tang Village, specifically its transmission through

time to the six major taijiquan sects.

4-1. The Influence of Tang Village Martial Arts on Inheritance of Chen-Style Taijiquan

The martial arts lineage of Tang Village experienced both a divergence and a dispersion between the Li and Chen families, which started in the seventh year of the Chongzhen (崇祯) reign of the Ming Dynasty (1934). It was recorded that Chen Wangting, after beating up an unfair examiner during a martial examination in Henan Prefecture, was forced to flee the region with his cousins Li Zhong and Li Yan.

Initially Li Zhong and Li Yan sought refuge in Qi County at their aunt's house, and they then later joined the peasant uprising, which was led by Li Zicheng (李自成). Chen Wangting initially had fled to Shandong, where his formidable martial skills led to his employment as a bodyguard. In the sixteenth year of Chongzhen (1943), the imperial court granted amnesty to Chen Wangting, and appointing him as a local militia commander.^{21, 22}

After the fall of the Ming Dynasty, to evade the oppression that occurred under the Qing Dynasty, the Chen and Li families ceased almost all interactions. Although Chen Wangting inherited the "Wuji HPM", "Taiji HPMA", and other martial arts from Thousand-Year Temple, as well as the writings of Li Chunmao; he did not receive the series of Taijiquan Classics and weaponry literature authored later by Li Zhong, Li Rusong, and Li Helin. These documents include "Expositions of Insights into the Practice of Thirteen Momentums", "Taijiquan Treatise", "Song of Push Hands", "Essentials of Push Hands", and others.

Based on the three taijiquan books that were authored by the inheritors of the Chen Village martial arts, namely Chen Xin, Chen Ziming, and Chen Zhaopi; there is found no confirmation of the assertion that Chen Bu was the originator of taijiquan. Therefore,

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discussions regarding the inception of Chen-Style Taijiquan can only be traced back to Chen Wangting's return to Chen Village, after his martial arts training at the Thousand-Year Temple.

In the late Ming Dynasty, during the Chongzhen era (1628-1644), Chen Wangting, the first generation of Chen-Style Taijiquan, returned the martial arts of "Wuji HPMA" and "Taiji HPMA" to Chen Village. Additionally, he acquired various other martial arts from the Thousand-Year Temple. Chen Wangting also established the virtuous principle of "teaching according to individual aptitude and these were passed down selectively to chosen individuals (因材施教、择人而传)".

According to records in the anthology of "Martial Arts in Jiaozuo (焦作武术)" which was published by the Jiaozuo Political Consultative Committee,²³ it is confirmed that Chen Wangting did not pass on his martial arts skills to his three sons, Chen Ruwei (陈汝为), Chen Rubi (陈汝弼), and Chen Ruwen (陈汝闻). Instead, he transmitted them to his nephews; Chen Ruxin (陈汝信) and Chen Suole (陈所乐).

The second-generation successor of Chen-Style Taijiquan, Chen Suole, then passed down the art to his nephews Chen Guangyin (陈光印) and Chen Zhengru (陈正如), as well as the twin brothers Chen Xunru (陈恂如) and Chen Shenru (陈申如). However, in the subsequent generation, the third-generation, Chen Zhengru, and his disciple, the fourth-generation Chen Jixia (陈继夏), do not share a father-son or close uncle-nephew relationship.²⁴

In the lineage of the sixth-generation Chen Changxing (陈长兴), his uncles Chen Bingqi (陈秉奇) and Chen Bingren (陈秉壬), and his father Chen Bingwang (陈秉旺) were not the sons of Chen Jixia. In fact, Chen Jixia was their paternal uncle. Chen Changxing began martial arts training under his father's guidance, and it is known that his martial skills were also inherited from his second uncle, Chen Bingren of the fifth generation, rather than the legendary Jiang Fa (蒋发) (further explanation surrounding this is

provided within Section 4-2.3). Therefore, Chen Changxing acquired the martial arts of "Wuji HPMA" and "Taiji HPMA" which were obtained by Chen Wangting from the Thousand-Years Temple and then passed down for generations in the Chen family.

The anthology of "Martial Arts in Jiaozuo" further documents that during the time of Chen Changxing, in addition to Tongbei boxing, there were two sets of the thirteen-momentum taijiquan in Chen Village. These two sets of taijiquan are believed to be the 58 Postures of Thirteen Momentums from Wuji HPMA and Wuji HPMA, respectively. Among them, "Wuji HPMA" was personally selected and privately transmitted by Chen Changxing to Yang Luchan. This illustrates that Chen Changxing continued to adhere to the traditional principle that began with Chen Wangting: of "teaching according to individual aptitude and passing down selectively to chosen individuals".

Chen Youben (陈有本) and Chen Youheng (陈有恒), were both sixth-generation successors alongside Chen Changxing, and received martial arts instruction from their father Chen Gongzhao (陈公兆). It is evident that they only learned the "Taiji HPMA" but did not obtain "Wuji HPMA", which had been selectively passed down by the lineage of Chen Wangting, Chen Suole, Chen Zhengru, Chen Jixia, and Chen Bingren. The Wuji HPMA is now referred to as the "Internally Transmitted Small Frame (内传小架)".

The "Internally Transmitted Small Frame", as outlined in Li Chunmao's "Wuji Health-Preserving Boxing Treatise", "Thirteen-Momentum Treatise", and "Song of Practicing Thirteen Momentums", emphasizes the method of relaxing the mind and sinking the body, and the intent of utilizing the entire body in an effortless manner, with the almost mystical principle of non-force, while coordinating the practice from Wuji to Taiji.

During a visit by Chen Liching (陈立清) (who was the 11th-generation successor of Chen-Style Taijiquan) to Yang Luchan's descendant Yang Zhenduo (杨振铎), he

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inquired whether Yang Luchan had learned the large frame or the small frame from Chen Changxing. Yang Zhenduo's response was "small circle (small frame)".

According to Chen Bosiang (陈伯祥), who was the tenth-generation successor of Chen-Style Taijiquan, Chen Changxing lived in the southeast corner of Chen Village, while Chen Youben resided in the northern region. Chen Youben obviously heard about the existence of the "Internally Transmitted Small Frame", but he never had an opportunity to witness it. Chen Changxing rarely revealed the selectively transmitted "Wuji HPMA".

However, Chen Youben did learn "Taiji HPMA", which is known as the "Initial Set of Thirteen Momentums (头套十三势) of Chen-Style Taijiquan". Due to its smaller circular movements, it is also known as the "Small Frame". In essence, the "Small Frame" represents the traditional practice of taijiquan, with a complete theoretical framework and strict, orderly training methods. Locally in Chen Village, it is praised as "Kungfu Frame (功夫架)" or "Household Frame (看家拳)", and is also known as "Study Room Frame (书房架)" because many of its inheritors had a cultural background.

Therefore, the Chen-Style Taijiquan forms inherited by Chen Youben are the "Initial Set of Thirteen-Momentum Small Frame Postures" or essentially the Taiji HPMA passed down from Chen Wangting. Subsequently, in the book "Illustrated Explanation of Chen-Style Taijiquan" written by Chen Xin, there is no discussion of large or small frames.¹² Essentially, the entire book focuses on the "Initial Set of Thirteen-Momentum Small Frame Postures" or Taiji HPMA. The training method emphasizes progressing from a large circle to a small circle, and ultimately from a small circle to a state without circles, reaching the pinnacle of mastery.

It appears that after instructing Yang Luchan, Chen Changxing became occupied with escorting convoys, and he had no time to guide his son, Chen Gengyun (陈耕耘) in martial arts. Thus, Chen Gengyun had no

choice but to seek guidance from his younger uncle, Chen Youben, and learn "Taiji HPMA". To further assist Chen Gengyun in cultivating his skills, Chen Youben, while preserving the essence of the initial set of thirteen-momentum postures, emphasized the use of external explosive power. He also enlarged the framework of the forms, creating a new style with a larger circular structure.

As a result, to distinguish this from the "Initial Set of Thirteen-Momentum Small Frame Postures", the terms "small circle" and "large circle" emerged. Chen Gengyun, and the seventh-generation successor of Chen-Style Taijiquan, passed down this new style within the family. It then reached the ninth generation with Chen Fake (陈发科), who in 1928 was invited to Beijing to teach taijiquan. He presented this new style to the public and, in order to differentiate it, it came to be known as the "large frame" or, confusingly, as "old frame", while the older traditional practice was referred to as the "small frame".²⁵ Subsequently, Chen Fake rearranged the old frame and, through his son, the tenth-generation successor Chen Zhaokui (陈照奎), solidified it into a "new frame".

Many years later, the transmission of Chen-Style Taijiquan experienced a significant interruption between 1941 and 1958. The primary reasons for this hiatus were the stress induced by the severe natural disasters that occurred in many regions in China like Chen Village in 1941, which was also coupled with the ravages and destruction caused by Japanese imperialist forces during the Sino-Japanese War. During this sad difficult period in history, the local population of Chen Village suffered substantial losses.

By 1949, the local population were also unaware of the policies of the new China and they were hesitant to engage in practices that might be forbidden. They thus refrained from practicing Chen-Style Taijiquan, and it was not until 1958, when Chen Zhaopi, the tenth-generation successor of Chen-Style Taijiquan, returned to Chen Village that a crucial period of opportunity for the

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development of Chen-Style Taijiquan occurred. But, subsequently, there was yet another interruption during the ten-year period of the Cultural Revolution in 1966.²³

During this complex period, in 1958, Chen Zhaopi began to impart the Chen-Style large frame routine to individuals who became to be known as the "Four Great Guardians", namely Chen Xiaowang (陈小旺), Chen Zhanglei (陈正雷), Wang Xian (王西安), and Zhu Tiancai (朱天才). However, initially, these four individuals did not develop any genuine martial skills from the large frame. It was only when Zhang Weizhen (张蔚珍), the village chief of Chen Village, invited Chen Zhaokui (陈照奎), the tenth-generation successor of Chen-Style Taijiquan, to return to Chen Village in 1973 that the taijiquan proficiency of the four individuals gradually improved.²⁶

During the same period, in 1958, it is known that three other tenth-generation successors of Chen-Style Taijiquan, namely Chen Boxiang (陈伯祥), Chen Junling (陈俊凌), and Chen Qiliang (陈启亮), came to learn the small frame of Chen-Style Taijiquan from the ninth-generation successor, Chen Kechong (陈克忠). Chen Kechong had previously studied the small frame of Chen-Style Taijiquan for over ten years under the guidance of Chen Xin.²⁷

As a result, the transmission of Chen-Style Taijiquan, encompassing the large, small, and new frames, continued in Chen Village. Regarding the popularity of the "Second Routine Cannon Fist (二路炮捶)" in Chen Village, which is characterized by rapid and forceful movements more aligned with external martial arts, as it deviates from the traditional taijiquan practice it was decided to not discuss this division, in this article.

So, in summary, the martial arts legacy of Wuji and Taiji from the Thousand-Year Temple in Tang Village has a rich history of transmission in Chen Village. Apart from the founder, Chen Wangting, Chen Changxing and Chen Youben are also pivotal figures in the development and history of taijiquan. Chen Changxing excelled in the "Wuji HPMA" and "Taiji HPMA" passed down

from Chen Wangting, both of which employ the small frame. Therefore, it is incorrect to attribute the creation of the large frame taijiquan to Chen Changxing, as some had previously claimed.

Fortunately, Chen Changxing broke with tradition by selectively transmitting the secret "Wuji HPMA" or "Internally Transmitted Small Frame" to the outsider, Yang Luchan; and it was this fortunate transmission that played a crucial role in the subsequent development and wide dissemination of the Yang-Style Taijiquan system.

According to the records kept in the "Chen Family Genealogy", the fifteenth-generation Chen Huamei (陈花梅), who studied under Chen Changxing, likely received the transmission of the "Internally Transmitted Small Frame." Unfortunately, this branch of transmission ended with Chen Huamei.²⁴

It was thus Chen Youben who inherited the "Taiji HPMA" or the "Initial Set of Thirteen-Momentum Small Frame Postures". He subsequently played a groundbreaking role in the differentiation of the large and small frames in Chen-Style Taijiquan.

The recently discovered "Thirteen-Momentum Martial Arts Manual" from Tang Village provides us with clear evidence regarding the principles and documented routines of "Wuji HPMA" and "Taiji HPMA", and demonstrates their shared origin, but very distinct lineages.

The "Thirteen-Momentum Martial Arts Manual" from Tang Village also reveals the names of the 58 postures in the "Taiji HPMA" section created by Li Zhong, Li Yan, and Chen Wangting (which are referred to in Section 4-1.1 below and were described in Figures 19 and 20 in the preceding article that was published in 2023⁴). This corresponds to the initial set of thirteen-momentum postures of Chen-Style Taijiquan, which were transmitted by Chen Youben, as the original small frame of Chen-Style Taijiquan. The sequence structure and posture names are essentially identical to the content of the small frame in the book

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"Illustrated Explanation of Chen-Style Taijiquan" compiled by Chen Xin.¹²

So, in summary, the "Thirteen-Momentum Martial Arts Manual" from Tang Village confirms that the "Taiji HPMA", created by Li Zhong, Li Yan, and Chen Wangting at the Thousand-Years Temple in Tang Village, was introduced and propagated in Chen Village by Chen Wangting.

4-1.1. The Names of the 58 Postures of Thirteen Momentums for Taiji HPMA

(1) Vajra Pounds Mortar, (2) Lazily Pull up the Robe, (3) Single Whip, (4) Vajra Pounds Mortar, (5) White Crane Spreads Wings, (6) Brush Knee and Twist Step, (7) Diagonal Form Twist Step, (8) Hidden Hand Elbow Strike, (9) Vajra Pounds Mortar, (10) Over the Shoulder Punch, (11) Blue Dragon Emerges from Water, (12) Punch under Elbow, (13) Backward Roll of Arms, (14) White Crane Spreads Wings, (15) Brush Knee and Twist Step, (16) Spreads Arms to Strike, (17) Hidden Hand with Elbow Strike, (18) Lazily Pull up the Robe, (19) Single Whip, (20) Cloud Hands, (21) High Pat on Horse, (22) Left Foot Oblique Insert, (23) Right Foot Oblique Insert, (24) Left Heel Kick, (25) Blue Dragon Plays in Water, (26) Two Kicks in Succession, (27) Embrace the Moon, (28) Left Heel Kick, (29) Right Heel Kick, (30) Hidden Hand Elbow Strike, (31) Small joint lock, (32) Embrace Tiger and Push Mountain, (33) Single Whip, (34) Forward and Backward Pushing, (35) Wild Horse Parts Its Mane, (36) Fair Lady Works at Shuttles, (37) Lazily Pull up the Robe, (38) Single Whip, (39) Cloud Hands, (40) Swing Leg and Twist Step, (41) Golden Rooster Stands on One Leg, (42) Backward Roll of Arms, (43) White Crane Spreads Wings, (44) Brush Knee and Twist Step, (45) Spreads Arms to Strike, (46) Lazily Pull up the Robe, (47) Single Whip, (48) Cloud Hands, (49) High Pat on Horse, (50) Crossed Feet, (51) Strike to Groin with Fist, (52) Yellow Dragon Stirs Water, (53) Single Whip, (54) Sparrow on the Ground Turning into a Dragon, (55) Step Forward to Seven Stars, (56) Step Back and Ride Tiger, (57) Turn

Around and Kick with Heel, and (58) Double Embrace Punch.

4-2. The Influence of Tang Village Martial Arts on the Inheritance of Yang-Style Taijiquan

The Tang Village's "Thirteen-Momentum Martial Arts Manual" confirms the "Wuji HPMA" transmitted by Chen Changxing to Yang Luchan, is the original form of the 58 postures of Thirteen Momentums for Wuji HPMA handed down by Li Chunmao (refer to Section 4-2.1 below and Figures 16 and 17 in the preceding article⁴). This corresponds to the original form of the "Internally Transmitted Small Frame".

Comparing these 58 postures of Thirteen Momentums for "Wuji HPMA" with the Yang-Style Taijiquan postures that are recorded in early publications, such as the "Illustrated Explanations of Taijiquan Postures" published by Xu Yusheng in 1921⁶ and the "Art of Taijiquan" published by Chen Weiming in 1925,²⁸ the overall structure of the routines is fundamentally consistent, and some posture names are basically the same as those postures contained in the Thirteen Momentums for Wuji HPMA.

Based on the observations that Yang Luchan's learned martial arts from Chen Changxing, in the past, many people, mistakenly believed that when Yang Luchan taught taijiquan in Beijing, he modified the postures of the high-difficulty movements in Chen-Style Taijiquan, thus creating unfounded rumors about the formation of the Yang-Style Taijiquan.

For instance, he changed the names of postures like "Lazily Pull up the Robe (懒扎衣)" and "Backward Roll of Arms (倒卷肱)" in Chen-Style Taijiquan to "Grasp Sparrow's Tail (揽雀尾)" and "Repulse the Monkey (倒撵猴)" in Yang-Style Taijiquan. Now, the Tang Village's "Thirteen-Momentum Martial Arts Manual" elucidates the names of the 58 postures of the Thirteen Momentums for Wuji HPMA, and corrects these past misconceptions and is able to restore the true historical origin of taijiquan. Although Yang

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Luchan did learn the arts from Chen Changxing, the "Wuji HPMA" he received predates the current transmission of "Taiji HPMA" in Chen-Style Taijiquan.

After studying under Chen Changxing for 18 years, Yang Luchan passed down to his three sons the Yang-Style Taijiquan that only includes two categories: "Application Frame (用架)" (Fast Frame, Fighting Frame) and "Practicing Frame (练架)" (Slow Frame, Performing Frame). Here it is important to note there was no distinction between large, medium, and small frames. It is known that Yang Banhou (杨班侯) preferred the Application Frame, while Yang Jianhou (杨健侯) had a penchant for Practicing Frame.

The Application Frame is what current practitioners commonly refer to as "Shaohou Frame" because the third generation, Yang Shaohou (杨少侯), insisted on not modifying the original small frame passed down from his uncle, Yang Banhou.²⁹ Yang Shaohou once stated: "The essence of taijiquan lies in the Application Frame, which is a hidden secret; the master imparts it, but only a few can truly inherit it".³⁰ Practicing Frame, now commonly referred to as "Jianhou Frame," is attributed to Yang Jianhou, who modified the original small frame into the medium frame.

When Yang Luchan first entered the palace in Beijing to teach martial arts, he neither thought of keeping secrets nor dared to transmit falsehoods. Later, when Yang Banhou came to Beijing to assist his father in teaching martial arts, he was dissatisfied with his father's decision to pass on the entire taijiquan skills openly. Yang Banhou gathered the disciples and stated that, given his father's (Yang Luchan's) advanced age he should retire; henceforth, they should practice martial arts according to a new frame, which became the modified large frame (which Yang Banhou had personally altered for external transmission). He instructed them not to practice Yang Luchan's routines anymore. This directive was essentially a call to "revoke the small frame".³¹ Subsequently, in the third generation, Yang Chengfu (杨承甫) further modified the publicly disseminated large

frame, which is now commonly referred to as the "Chengfu Frame."

4-2.1. Names of 58 Postures of Thirteen Momentums for Wuji HPMA

(1) Wuji Starting Stance, (2) Grasp Sparrow's Tail, (3) Single Whip, (4) Lift Hands, (5) White Crane Spreads Wings, (6) Brush Knee and Twist Step, (7) Play the Lute, (8) Brush Knee and Twist Step, (9) Play the Lute, (10) Step Forward, Deflect, Parry and Punch, (11) Withdraw and Push, (12) Embrace Tiger and Push Mountain, (13) Single Whip, (14) Punch under Elbow, (15) Repulse the Monkey, (16) White Crane Spreads Wings, (17) Brush Knee and Twist Step, (18) Spreads Arms to Strike, (19) Single Whip, (20) Cloud Hands, (21) High Pat on Horse, (22) Kick with Left and Right Feet, (23) Turn Around and Kick, (24) Step Forward, Punch and Strike, (25) Turn Around and Double Kick, (26) Sweep Kick with a Turn, (27) Turn Around and Kick with Heel, (28) Step Forward, Deflect, Parry and Punch, (29) Withdraw and Push, (30) Embrace Tiger and Push Mountain, (31) Single Whip, (32) Wild Horse Parts Mane, (33) Single Whip, (34) Fair Lady Works at Shuttle, (35) Single Whip, (36) Cloud Hands, (37) Lower Stance, (38) Golden Rooster Stands on One Leg, (39) Repulse the Monkey, (40) Diagonal Flying, (41) Lift Hands, (42) White Crane Spreads Wings, (43) Brush Knee and Twist Step, (44) Fan Through the Back, (45) Single Whip, (46) Cloud Hands, (47) High Pat on Horse, (48) Cross Hands and Lotus Kick, (49) Step Forward and Strike to Groin with Fist, (50) Step Forward and Grasp Sparrow's Tail, (51) Single Whip, (52) Lower Stance, (53) Step Forward to Seven Stars, (54) Step Back and Ride Tiger, (55) Turn Around and Sweep the Lotus, (56) Bend Bow and Shoot Tiger, (57) Double Embrace Punch, and (58) Wuji Stance.

4-2.2. Clarification of Formal Naming of Taijiquan

Since Chen Changxing (1771-1853) did not inherit the same documents (such as

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“Taijiquan Treatise”, “Song of Push Hands”, and “Essentials of Push Hands” authored by Li Helin (1716-1808)); the phrase “Taijiquan” was not used, when he passed on the Internally Transmitted Small Frame or Wuji HPMA to Yang Luchan (1799-1872). Thus, when Yang Luchan taught martial arts in Beijing, he referred to what he learned from Chen Changxing as “Cotton Boxing” (Soft Boxing) rather than calling it “Taijiquan”.

However, today there is a strong desire to clarify the origin behind the name taijiquan. Although the term “Taiji” first appeared in the ancient book “I-Ching or Book of Changes (易经)”, which was written three thousand years ago; naming the martial art as “Taiji” only occurred much later, in the late Ming Dynasty.

According to surviving historical records from Tang Village, the term “Taiji” was first used in the Taiji HPMA created by Li Zhong, Li Yan, and Chen Wangting in the year 1636; and the term “Taijiquan” officially appeared in Li Helin's “Taijiquan Treatise” in 1787. As mentioned in the preceding article which was published in 2023⁴, Li Helin's “Taijiquan Treatise” was initially unknown, until Wu Yuxiang's (武禹襄) brother Wu Chengqing (武澄清), who served as the magistrate of Wuyang (舞阳) County in Henan Province, obtained the “Taijiquan Treatise” from Li Helin's son, Li Yongda (李永达), at the Li family's salt shop in Beidu Town, North Wuyang, where it was then transcribed and mistakenly attributed to Wang Zongyue (王宗岳).⁴

Therefore, the current consensus has mistakenly attributed the earliest appearance of the name “Taijiquan” to the version published by Li Yiyu in 1881, in Three Old Manuals (老三本), which includes Wang Zongyue's “Taijiquan Treatise”.

According to the information contained in Tang Village's two sets of martial arts manuals, the formal naming of Taijiquan occurred in 1787, and the name was given by Li Helin of Tang Village.

4-2.3. Clarification of the Claim of Yang-Style Taijiquan Regarding Jiang Fa Teaching Chen Changxing

The life of Jiang Fa is unclear, and there is controversy surrounding his historical verification. Among the various existing legends, there are three individuals named Jiang Fa. The first is associated with the Yang-Style Taijiquan legend during the Qianlong (乾隆) period (1736-1796); the second is linked to the Zhaobao-Style Taijiquan legend from the late Ming to early Qing Dynasties (1574-1605); and the third Jiang Fa is claimed by the Chen-Style Taijiquan to be a contemporary of Chen Wangting (1600-1680), described as a “servant with the Jiang surname”. The Yang, Wu, Wu-Hao, Sun, and Zhaobao sects all assert that a Jiang Fa transmitted taijiquan to Chen Changxing. This article refutes this claim, and it emphasizes the lack of evidence that supports the notion that Jiang Fa ever studied “Wuji HPMA” or “Taiji HPMA” at the Thousand-Year Temple in Tang Village.

Further clarification reveals that the assertion regarding the transmission of Yang-Style Taijiquan from Jiang Fa to Chen Changxing primarily originates from Yang Chengfu's “Preface” in the book named the “Complete Book on Taijiquan Application”.³²

However, the entire book, including Yang Chengfu's “Preface”, was ghostwritten by Mr. Cheng Manching (郑曼青). The original title during its initial release in 1934 was “The First Volume of Complete Book on Taijiquan Application”, and Cheng Manching had plans to write the second volume on weaponry.³³ The “Preface” written by Cheng Manching on behalf of Yang Chengfu is in classical Chinese, making it challenging for those without a solid foundation in classical Chinese to comprehend. The Preface emphasizes taijiquan as an art of strengthening the body, and aimed to motivate the Chinese people to enhance their physical well-being, and ultimately contributing to the salvation of the nation and resistance against Japanese aggression.

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In the text, the use of the name Yang Luchan, as the grandfather of Yang Chengfu, is employed to emphasize the narrative. For instance, the opening sentence reads: "In my youth, I observed my great-grandfather, Yang Luchan, leading the older generations and his numerous disciples in the daily practice of taijiquan..... As I grew older, one day my uncle, Yang Banhou, instructed me to learn taijiquan under his guidance". Subsequent sentences include statements such as "Grandfather hastily interrupted my father and said: Explaining it in this way won't make this youngster genuinely accept and understand. Grandfather gestured with his hand, pressing me gently, and said: Sit down, let me tell you: my purpose in practicing and teaching this martial art is not to engage in combat with others but to safeguard from oppression. It is not for making a living but for contributing to the defense of our nation".

The preface also states that "my grandfather further informed me: "Taijiquan originated from Zhang Sanfeng in the late Song dynasty". Those who inherited this art include Wang Zongyue, Chen Tongzhou (陈同州), Zhang Songxi (张松溪), Jiang Fa, and other predecessors, passed down their knowledge through many generations without interruption. Master Chen Changxing was the sole disciple of Mr. Jiang Fa - handed down through several generations in the Chen family".

In fact, Yang Luchan passed away in the year 1872, and his grandson, Yang Chengfu, was born 11 years later, in the year 1883. It is thus implausible for Yang Chengfu to have seen his great-grandfather Yang Luchan. Furthermore, when Yang Banhou passed away at the age of 55 in 1892, Yang Chengfu was only nine years old. It is thus improbable for him to have received substantial martial arts training at such a young age, let alone comprehend the philosophical principles of Taiji. Therefore, the assertions in the "Preface" claiming that Yang Luchan personally guided and informed Yang Chengfu about taijiquan's origin from Zhang Sanfeng and the role of Chen Changxing as the only disciple of Jiang Fa are at best fictional and the text lack

credibility.

In the book "Authentic Taijiquan" by Du Yuanhua, a practitioner of Zhaobao-Style Taijiquan, it is suggested that Jiang Fa learned taijiquan from Mr. Wang Linzhen (王林桢). However, Du Yuanhua did not explicitly state in his book whether Wang Linzhen and Wang Zongyue were the same person. In Chen Xin's book "Illustrated Explanations of Chen-Style Taijiquan", there is an initial mention of "Du Yuwan explaining the martial secrets learned by Jiang Fa from a Shanxi master", which suggests a connection to Zhaobao. Then, later, Chen Xin clarified that this was an erroneous citation and denied the existence of Jiang Fa. The conflicting discussions between Chen Xin and Du Yuanhua regarding Jiang Fa are unrelated to the lineage of Chen Changxing, and thus this article will not delve any further into the details of this.

4-3. Influence of Tang Village Martial Arts on the Inheritance of Wu-Hao-Style Taijiquan

The "Thirteen-Momentum Martial Arts Manual" from Tang Village also clearly elucidates the progress of the evolution of the techniques in Wu-Hao-Style Taijiquan. It is widely known that the founder of Wu-Hao-Style Taijiquan, Wu Yuxiang, initially learned taijiquan (Wuji HPMA) from his fellow villager Yang Luchan. In 1852, Wu Yuxiang personally traveled to Zhaobao Town, Wen County, Henan Province, to study under Chen Qingping (陈清平) for over a month, to master its subtleties. Subsequently, Wu Yuxiang passed on his knowledge to his nephew Li Yiyu, who in turn transmitted it to Hao Weizhen (郝为真).

According to early records in the Wu-Hao-Style Taijiquan manuscripts preserved in Li Yiyu's private collection of "Three Old Manuscripts", the early Wu-Hao-Style Taijiquan routines,³⁴ and the 58 postures of Thirteen Momentums for Wuji HPMA (as documented in the "Thirteen-Momentum Martial Arts Manual") are essentially identical. These routines included postures

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such as "Grasp Sparrow's Tail", reflecting Wu Yuxiang's initial learning from Yang Luchan.

In later versions of the Wu-Hao-Style Taijiquan routines, there was then some influence from Chen Qingping's teaching, which lead to minor revisions in the names of the postures, such as changing "Grasp the Sparrow's Tail" to "Lazily Pull up the Robe".³⁵

It is evident that Wu Yuxiang learned the "Initial Set of Thirteen-Momentum Small Frame Postures", which is the original Chen-Style Taijiquan (or Taiji HPMA) from Chen Qingping. Therefore, Wu-Hao-Style Taijiquan indeed represents a blending of routines from both the Yang and Chen families. However, the foundational structure of Wu-Hao-Style Taijiquan still adheres to the "Wuji HPMA" routine of the Yang-Style Taijiquan.

Wu Yuxiang, originally learned taijiquan from Yang Luchan, later passed on his martial arts knowledge to Yang Luchan's second son Yang Banhou. With the deep and longstanding friendship between the Wu and Yang families, it is likely that Wu Yuxiang shared those documents (such as the Li Helin's "Taijiquan Treatise") with the Yang family. As indicated earlier, Wu Yuxiang transcribed the Taijiquan Classics acquired by his brother Wu Chengqing at the Li family's salt shop. Additionally, the other "Old Manuscripts of Yang-Style Taijiquan (杨氏太极拳老谱)", which were kept as a secret in the Yang family, bears simple and sincere language and was authored by Yang Luchan himself. Yang Luchan spent many years teaching taijiquan at the Palace in Beijing, and was not unfamiliar with literary pursuits.¹⁹

4-4. Influence of Tang Village Martial Arts on Inheritance of Zhaobao-Style Taijiquan

Zhaobao Taijiquan is known for the saying "the martial arts does not leave the village", hence its limited popularity. There are two claims regarding its origin: one tradition

asserts that it was created by the Wudang Daoist Zhang Sanfeng, while another suggests that it was developed by Chen Qingping, a disciple of Chen Youben, the sixth-generation inheritor of Chen-Style Taijiquan.²⁴ Chen Qingping's era of teaching marked a pinnacle in the history of Zhaobao-Style Taijiquan, and his disciples have since evolved into four major branches: represented by He Zhaoyuan's Daili frame (和兆元的代理架), Li Zuozhi's Tengnuo frame (李作智的腾挪架), Zhang Jingzhi's Lingluo frame (张敬芝的领落架), and Li Jingyan's Hulei frame (李景延的忽雷架), with the He Zhaoyuan lineage currently being the predominant one.

The book "Authentic Taijiquan," published in 1935 by Chen Qingping's disciple Du Yuanhua, provides us with the first record of the routines, principles, and the techniques of Zhaobao-Style Taijiquan.⁹ Similar to the first book documenting the routines, principles, and techniques of the Chen-Style Taijiquan initial set of thirteen-momentum small frame, which is in Chen Xin's book "Illustrated Explanation of Chen-Style Taijiquan", published in 1919.¹² Both books provide the most primitive records of their respective postures, and offer invaluable and direct historical materials for studying and exploring the principles and the origins of both Chen-Style Taijiquan's Initial Small Frame and Zhaobao-Style Taijiquan.

It is found that many of the routines illustrated in these two books are remarkably similar, especially in various postures. They resemble the 58 postures of Thirteen Momentums for Taiji HPMA, such as Vajra Pounds Mortar, Diagonal Form Twist Step, Spreads Arms to Strike, Backward Roll of Arms, Hidden Hand with Elbow Strike, Left Foot Oblique Insert, Right Foot Oblique Insert, Two Kicks in Succession, Left Heel Kick, Right Heel Kick, Blue Dragon Emerges from Water, Strike to Groin with Fist, Crossed Feet, and more.

Chen-Style Taijiquan's Initial Small Frame and Zhaobao-Style Taijiquan share over 20 identical posture names, with more than 10 postures being nearly identical, differing only in arrangement. Fundamentally, both

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Chen-Style Taijiquan's Initial Small Frame and Zhaobao-Style Taijiquan are similar to the 58 postures of Thirteen Momentums for Taiji HPMA from Tang Village. Although the relationship between the practitioners of Chen Village and Zhaobao Town is difficult to align, it is evident that both taijiquan styles share a common origin but have developed differently. Their common source is the "Taiji HPMA" from Tang Village, but the "Taiji HPMA" was not created by Wudang Daoist Zhang Sanfeng.

It is also noteworthy that Chen Xin's book does not mention the Tang Village martial arts literature, and Du Yuanhua's book only includes two pages of the "General Discussion of Taijiquan with Song" under the name of Chen Qingping, which is actually Li Chunmao's "Thirteen-Momentum Treatise". However, Li Helin's "Taijiquan Treatise" and other documents are not included. As mentioned previously, in Section 4-1, Chen Youben (Chen Qingping's teacher) did not learn "Wuji HPMA" and he did not receive Li Chunmao's theoretical works as "Wuji Health-Preserving Boxing Treatise", "Thirteen-Momentum Treatise", and "Song of Practicing Thirteen Momentums". Other descendants of Chen Village also did not receive the documents of Li Zhong and Li Helin, so the writings of Chen Xin and other later Chen family members do not contain the important Tang Village taijiquan documents.

Since Chen Qingping's teacher, Chen Youben, did not receive the Tang Village documents, Chen Qingping did not know about the other documents, such as the "Taijiquan Treatise" when instructing Wu Yuxiang. It is possible that the reason Wu Yuxiang did not share these documents with Chen Qingping might be the time when Wu Yuxiang obtained Li Helin's "Taijiquan Treatise" from his brother Wu Chengqing at the Li family salt shop was after his seeking taijiquan guidance from Chen Qingping.

According to the report in the book "Analysis of Du Yuanhua's Authentic Taijiquan",³⁶ Du Yuanhua's teacher, Ren Changchun (任长春), began studying martial arts in his youth under Chen

Qingping. Later, he learned martial arts from Li Rusong, a Daoist from Taihang Mountain (太行山). The book mentions that Li Rusong, who was born in the seventh year of the Kangxi reign of the Qing Dynasty (1668), was the eleventh-generation descendant of the Li family in Tang Village. Li Rusong also passed on his martial arts skills to nephew Li Helin.

Tang Village's records include Li Rusong's writings such as the book "Eight Methods, Five Steps, Natural Way of Daoism Daoism" and other martial arts literature. Therefore, Du Yuanhua's book published an article of Li Chunmao's "Thirteen-Momentum Treatise", which was likely provided to Ren Changchun by Li Rusong.

In 1998, Zhaobao Town released the unprecedented "Secrets of Taiji" edited by Wang Baiqing (王柏青) in the sixth year of the Yongzheng reign of the Qing Dynasty (1728).³⁷ In addition to Li Chunmao's "Thirteen-Momentum Treatise", the content of this book includes Li Helin's "Taijiquan Treatise" and several practice experiences related to Xing Xihuai (邢喜怀), Zhang Chuchen (张楚臣), and Wang Baiqing, respectively. This book has sparked numerous debates. If the statements made in this book are true, the sources of these martial arts treatises should be from the Daoist Li Rusong who taught taijiquan in Zhaobao Town.

At this point, it is perhaps worth mentioning that there was an incident regarding the dispute over who was the founder of taijiquan -- which revolved around whether it was Zhang Sanfeng or Chen Wangting. This incident occurred in August 2004, when He Youlu (和有禄), the sixth-generation heir of Zhaobao-Style Taijiquan sued Zhang Jie (张杰), a martial artist from Qinyang City, Henan Province, and the "Wudang" magazine for defamation. The lawsuit originated from an article written by Zhang Jie in the July 2004 issue of "Wudang" magazine, accusing He Yulu of not mentioning his lineage to Wudang's Zhang Sanfeng and only tracing the hereditary He-Style Taijiquan back to Chen Qingping without discussing the Chen Qingping's

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lineage. This was seen as intentionally avoiding the roots of Zhaobao-Style Taijiquan, and Zhang Jie further accused He Yulu of "deceiving the teacher and destroying the ancestor" and "joining the Chen family". Two years later, Zhang Jie and the "Wudang" magazine lost the lawsuit, marking the end of this case, which is now referred to as the "First Legal Case of Taijiquan Reputation Infringement".³⁸

4-5. Influence of Tang Village Martial Arts on Inheritance of Wu-Style Taijiquan

Wu-Style Taijiquan Grandmaster Wu Quanyou (吴全佑) initially studied under Yang Luchan. Therefore, Wu-Style Taijiquan primarily evolved and innovated from the postures of Yang-Style Taijiquan. Although Wu Quanyou received some techniques from Song Shuming (宋书铭), the style remained quite similar to that they were transmitted by the Yang family. In principle, Wu-Style Taijiquan gradually revised its forms based on the foundation of the Yang family's small-frame style.

Examining the postures of Wu-Style Taijiquan routines as outlined by Xu Zhiyi, a disciple of Wu-Style, in his 1927 publication "Brief Discussion on Taijiquan",⁷ it becomes evident that they align with the 58 postures of Thirteen Momentums for Wuji HPMA. This highlights the distinctive characteristics of Wu-Style Taijiquan, known for its emphasis on softness, relaxed and natural movements, continuous flow, and the compact and agile nature of its postures.

The taijiquan classics, theories, songs, and formulas concealed within the Yang family were all passed down to the Wu family through the teachings of Yang Luchan and Yang Banhou. Subsequently, the other classics of "Yang-Style Taijiquan Old Manuscript (32 Chapters)" were brought to light in the form of facsimile editions. These editions include Wu Gongzao's (吴公藻) "Wu Family Taijiquan Lectures"³⁹ and Yang Zhenji's (杨振基) collection of "Yang Chengfu's Family-Transmitted Classical Hand-Copied Taijiquan Old Manuscript".⁴⁰

4-6. Influence of Tang Village Martial Arts on the Inheritance of Sun-Style Taijiquan

Sun Lutang (孙禄堂), a practitioner of Xingyi and Baguazhang, received instruction in Wu-Hao-Style Taijiquan from his care of Wu Yuxiang's disciple, Hao Weizhen, who was convalescing from an illness he had. Incorporating his own martial arts expertise, Sun Lutang developed his unique style, which is now known as Sun-Style Taijiquan. In 1919, he published the book "Study of Taijiquan".⁸ The published routines and techniques in Sun-Style Taijiquan exhibit a clear evolution from the later stages of Wu-Hao-Style Taijiquan, for instance, incorporating the "Lazily Pull up the Robe" posture while omitting the "Grasp Sparrow's Tail" posture.

Although the postures of Wu-Hao and Sun Styles share a common foundation, utilizing the framework of Tang Village's "Wuji HPMA", Sun Lutang introduced modifications, emphasizing seamless progression and regression in simple and smooth movements. He integrated the principles of Baguazhang, imparting a flexible and dynamic quality to the arts.

In his book "Study of Taijiquan", Sun Lutang delves into the principles of Wuji and Taiji. Additionally, he includes three writings attributed to Li Yiyu, that were obtained from Hao Weizhen: "Five-Character Secret (五字诀)", "Secret of Scattering and Releasing (撒放秘诀)", and "Essentials of the Practice of the Form and Push-Hands (走架打手行工要言)". While Sun Lutang's discussion on Wuji corresponds to Li Chunmao's "Wuji Health-Preserving Boxing Treatise", he did not explicitly cite the original source in his book.

5. Conclusion

The martial arts practiced at the Thousand-Year Temple in Tang Village integrate various traditional Chinese philosophical thoughts, including Confucianism, Daoism, Buddhism, I-Ching (The Book of Changes), and traditional Chinese medicine. It serves

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not only as a means of self-defense but also as a path for maintaining health (health preservation) and fitness. The roots of "Wuji HPMA" and "Taiji HPMA" at the Thousand-Year Temple are not the creation of a single immortal or a single individual but rather the wisdom crystallized through the diligent study and slow development by numerous skilled practitioners throughout the temple's history. Similarly, the present-day taijiquan styles passed down by various taijiquan sects cannot be attributed to a creation by a single immortal or individual.

The valuable genealogy and martial arts manuscripts discovered in Tang Village reveal that Li Chunmao, (based on the inherited "Wuji HPMA") authored the documents "Wuji Health-Preserving Boxing Treatise", "Thirteen-Momentum Treatise", and "Song of Practicing Thirteen Momentums". These writings expound on the principles and efficacy of Wuji HPMA, laying the theoretical foundation for the emergence of taijiquan. Subsequently, the three cousins Li Zhong, Li Yan, and Chen Wangting, guided by Li Chunmao's teachings and writings, established "Taiji HPMA", which served as the origin for various martial arts.

Following this, Li Zhong's writings in the "Expositions of Insights into the Practice of Thirteen Momentums" and Li Helin's compositions such as "Taijiquan Treatise", "Song of Push Hands", and "Essentials of Push Hands" eloquently elucidate the practice methods and the distinctive features of taijiquan. Unsurprisingly, these documents become classic treatises in the developmental history of taijiquan, and are still revered by various taijiquan sects today.

This article continues to clarify the origins of taijiquan, which we began in 2023, and it provides new additional explanations, which are based on the historical materials that have been uncovered from Tang Village. It also scrutinizes the earliest published books from the six major taijiquan sects (Chen, Yang, Wu, Wu-Hao, Sun, and Zhaobao), and it confirms that the training routines and techniques of each sect are derived from the respective "Wuji HPMA" and "Taiji HPMA"

that were discovered at Tang Village - specifically this includes the "Thirteen Momentums" framework.

Through an analysis of the historical lineage and routines practiced by each sect, it is revealed that the Yang, Wu, Wu-Hao, and Sun sects have continued practicing the style derived from "Wuji HPMA", while the Chen and Zhaobao sects practice the style stemming from "Taiji HPMA".

The historical martial arts heritage of the Thousand-Year Temple in Tang Village, as the birthplace of taijiquan, is now clear, and the newly discovered "Thirteen-Momentum Martial Arts Manual" from Tang Village holds profound significance for future research. All controversies surrounding the history of taijiquan, including its origins and the transmission trajectories of various taijiquan sects, can be clarified through the study of Tang Village's "Li Family Genealogy" and martial arts "Manuals". This undoubtedly contributes significantly to the understanding of taijiquan's inheritance and it will greatly assist in its worldwide development.

6. Acknowledgments

The author would like to thank Mr. Li Libing (李立炳) for providing photo-copies of the Thirteen-Momentum Martial Arts Manual, and I also would like to thank Professor Li Deyin (李德印) for providing suggestions on writing the highlights section following the explanation of the Thirteen-Momentum Martial Arts Manual.

References

1. Yao, Fuchun and Jiang, Rongqiao, "Lectures on Taijiquan", published by Shanghai Martial Arts Press, 1930.
2. Li, Shirong and Li, Yongjie, "Ancient and Modern Taijiquan Manual and the Revelation of Its Origins", published by Taipei Yiwen Martial Arts Studies Press, 2007.
3. Gu, Liuxin, "Taijiquan Techniques", Shanghai Education Press, 350-352, 1982.

DOI: 10.57612/JS24.JTS.03.01

4. Chu, T. Julian, Li, Deyin, Li, Libing, and Wei, Meizhi, "Unraveling the Mystery Surrounding the Origins of Taijiquan by New Historical Materials in Tang Village, China", *Journal of Taiji Science*, Vol. 2, Iss. 1, 1-27, June 2023.
5. Li, Yiyu, "Postscript and Five-Character Secret of Wang Zongyue's Taijiquan Treatise", from the collection of Hao He, 1881.
6. Xu, Yusheng, "Illustrated Explanation of Taijiquan Postures", published by Beijing Printing House, 1921.
7. Xu, Zhiyi, "Brief Discussion on Taijiquan", published by Shanghai Taijiquan Research Society, 1927.
8. Sun, Lutang, "Study of Taijiquan", published by Shanghai Zhonghua Bookstore, 1919.
9. Du, Yuanhua, "Authentic Taijiquan", printed by Kaifeng Queded Printing, 1935.
10. Hong, Hao and Liang, Yukun, "Study on Zhang Sanfeng's Creation of Taijiquan", *Journal of Wuhan Sports University*, Issue 3, 46-52, 2015.
11. Wei, Zhen and Fan, Yuzhou, "Study on the Origin of Taijiquan", *Sports Culture Guide*, Issue 7, 2009.
12. Chen, Xin, "Illustrated Explanation of Chen-Style Taijiquan", published by Kaifeng Kaiming Bookstore, 1919.
13. Chen, Ziming, "Chen Family's Inherited Taijiquan Art", printed by Shanghai Wushu Society, 1932.
14. Chen, Jifu, "Compilation of Chen-Style Taijiquan", printed by Youth Society Rensheng Printing Office, 1935.
15. Tang, Hao, "The Roots of Taijiquan", published by Hong Kong Martial Arts Research Society, 1963.
16. Yu, Zhijun, "Tracing the Origin of Taijiquan in Chinese Martial Arts History", *Wudang Magazine*, Vol. 1, 36-39, 2014.
17. Wang, Xuhao and Wei, Meizhi, "Cultural Exploration of the Origin of Taijiquan in Thousand-Year Temple", *Zhongzhou Sports Magazine*, Vol. 1, 2013.
18. Zhao, Daoyi, "Chronicles of True Immortals Through the Ages", Website link: <https://ctext.org/wiki.pl?if=en&res=591421>.
19. Li, Chang and Li, Jinyang, "The Mystery of the Origins of Taijiquan - Chapter on Classics", *Combat Sports Magazine*, Vol. 3, 2008.
20. Li, Chang and Li, Jinyang, "The Mystery of the Origins of Taijiquan - Chapter on Postures", *Combat Sports Magazine*, Vol. 5, 2008.
21. Wang, Xingya and Li, Libing, "A New Theory on the Birthplace of Li Yan and the Source of Chen-Style Taijiquan: The Discovery and Value of the Li Family Genealogy of Tang Village Written in the 55th Year of the Kangxi Reign", *Zhongzhou Academic Journal*, 4, 166-170, July 2005.
22. Wei, Meizhi, "Exploration of the Three Sources of Chen-Style Taijiquan", *Wuhun Magazine*, Vol. 8 & 9, 2022.
23. Zhao, Yuhui and Jing, Wenpeng, "Special Issue on Martial Arts in Jiaozuo", *Jiaozuo Municipal Political Consultative Conference Publishing, Forum Discussion*, DOI: n49eqe77dy/595083, Vol. 5, 117-147, 2008.
24. Chen, Xin, "Chen Family Genealogy" in "Illustrated Explanation of Chen-Style Taijiquan", published by Kaifeng Kaiming Bookstore, 1919.
25. Liu, Ye-Ting, "Research on the Origin and Development of Taijiquan", published by Yiwen Martial Arts and Cultural Company, Taiwan, March 2012.
26. Cai, Wei, "Martial Arts Ecology of Chen Village Taijiquan", *Sanlian Life Weekly*, Vol. 6, 2005.
27. Dai, Zhiyong, "Chen-Style Small Frame Quietly Inherited - Similar Principle and Methods with Slight Differences in Movements", *Southern Weekend*, October 11, 2013.
28. Chen, Weiming, "Art of Taijiquan", published by Shanghai Zhonghua Bookstore, 1925.
29. Yan, Hanxiu: "Four Ounces Deflect A Thousand Pounds, The Elderly Can Control The Masses - A Record of Wu-Style Taijiquan Successor Ma Yueliang", in "Extraordinary Achievements of Taijiquan", *People's Sports Publishing House*, 1996.
30. Li, Lian, "True Interpretation of Yang Shaohou's Taijiquan Using Form", *People's Sports Publishing House*, 2002.
31. Li, Zheng, "Overview of Yang-Style Taiji

DOI: 10.57612/JS24.JTS.03.01

- Internal Style Techniques”, Wudang Magazine, Vol. 1, 2001.
32. Yang, Chengfu, "Complete Book on Taijiquan Application", published by Shanghai Zhonghua Bookstore, 1934.
 33. Chu, T. Julian, "An Explanation of the Preface Written by Cheng Manching for the Complete Book on Taijiquan Application", Taiwan Taijiquan Magazine, Iss. 196, 3-12, August 2011.
 34. Shen, Shou, "Taijiquan Manual", Beijing People's Sports Publishing House, 104-108, 1991.
 35. Gu, Liuxin, "Taijiquan Techniques", published by Shanghai Education Press, 63-72, 1982.
 36. Wang, Haizhou and Yan, Hanxiu, "Analysis of Authentic Taijiquan by Du Yuanhua", People's Sports Publishing House, 1999.
 37. Wang, Zhenchuan and Tan, Dajiang, "Rare Manuscript, Reviving the Hidden Classics", Wudang Magazine, Vol. 8 & 9, 1998.
 38. Cheng, Feng and Liu, Zikai, "Problems in Development of Chen-Style Taijiquan in Wen County and Countermeasures", Journal of Jiaozuo University, Vol. 1, 2020.
 39. Wu, Gongzao, "Wu Family Taijiquan Lectures", published by Shanghai Jianquan Taijiquan Research Society, 1936.
 40. Yang, Zhenji, "Yang Chengfu-Style Taijiquan", published by Guangxi Nationalities Publishing House, June 2009.

Graphical Method of the Winning Mechanism of Taiji

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Abstract – The classical winning mechanism in Taiji push-hand is to attack the opponent's weakness with our strengths. A new software code, which we named “Taiji Master” was developed to calculate Taiji in complicated situations. This program was designed to assist students to learn the correct moves in a graphical method is simple, intuitive and practical manner. The graphical method develops a winning mechanism from the eight movements/philosophies: throw like an arrow; induce to empty; four ounces deflect thousand; optimized strike along connection of the two feet; crotch spiraling to strike narrow stance; crotch turning to assault short stance; waist rotating to beat small stance; buildup advantage to conquer the weak link. Being able to resolve Taiji movements in a mechanical/numerical manner allows the traditional martial arts world to ratify the inheritance of the master; and to allow research studies to determine optimal moves in any specific situation.

Introduction

In push-hand, we need to create our own advantages. We need to look for the opponent's weaknesses, know where our advantages are stronger than the opponent's weaknesses, and we must control the direction of force that we exert, in order to destroy the opponent's balance while maintaining our own center. The problem discussed here is the data that we calculated in early versions of the computer program is able to demonstrate the various mechanisms,

but the data, for the lay person, was not easy to understand. What is required is a graphical method that is more intuitive and is able to provides practical uses that might be useful for those practicing Taiji.

For example, when the bow stance and the sit stance duel each other, the calculations show that the bow stance will win when at the mid point (see the example provided in table 1) are pushing forces, and the sit stance will win when at the midpoint the participant employs a pulling force (see table 1 and 2).

Photo



Stick image front view

Bird view

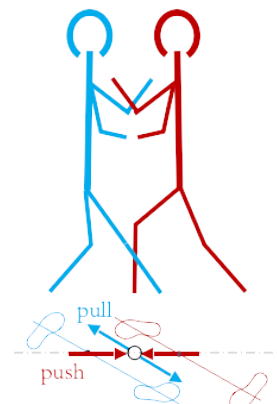


Fig. 1. Bow stance vs sit stance

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Stance Classification	body mass	friction coefficient	critical level	foot length	front rear feet format	front foot horizontal distance	front foot lateral distance	front foot angle	rear foot horizontal distance	rear foot lateral distance	rear foot angle	gravity center height	1st connecting hand height	1st connecting hand horizontal distance	1st connecting hand lateral distance
	m	μ	CrLe	FoLe	Fr/Re	L_{qx}	L_{qz}	FrAn	L_{rx}	L_{rz}	ReAn	H_z	H_1	L_{x1}	L_{z1}
	kg	no	nu	m	str	m	m	deg	m	m	deg	m	m	m	m
Right brush kneebow push/P	60	0.5	1	0.25	RF/LF	0.24	0.12	0	0.56	0.28	-45	0.9	1.1	0.40	0.0
Left sit stancedivert push/P	60	0.5	1	0.25	RF/LF	0.56	0.28	0	0.24	0.12	-45	0.9	1.1	0.40	0.0

Stance Classification	1st horizontal force ratio	1st vertical force ratio	1st horizontal force	1st vertical force	Initial force/moment	Normal Stability moment	Critical condition	front foot normal force	rear foot normal force	front foot force tangent	rear foot force tangent	moment in normal direction
	$\varepsilon_{FM}(1)$	$\varepsilon_{FM}(2)$	F_{x1}	F_{y1}				N_q	N_h	$\tan\phi_q$	$\tan\phi_h$	
	no	no	N	N				N	N	no	no	
Right brush kneebow push/P	1.0		136.6	0.0	102.4	67.2	1Nlos	261.4	326.6	0.26	0.22	67.2
Left sit stance divert push/P	1.0		126.8	0.0	95.1	67.2	1Fsl	36.9	551.1	0.50	0.21	62.4

It is also seen that the bow stance gains the advantage by releasing a pushing force, and the sit stance has an advantage when employing a pulling force (see examples in table 1&2)¹. This argues, in this situation, that both sides have an equal chance to win; and who will wins will depend on who is able to control the force direction.

To release a force that will be result in the person winning the contest, the person will needs to generate both a faster velocity and a higher acceleration than their opponent. It is also important to control the direction and magnitude of the force. Thus, winning is depend on two key points: the gaining of an advantage in stance and the control of the force direction. However, the complexity here is the advantage in the stance is directly linked to the required force direction. In a duel, when you have the more advantageous stance and you control the opposing force direction that matches your chosen stance, you can combine the force of your movements and overcome the opponent's critical force.

Examples

From the author's prior studies¹ the angle of the bow and the sit degree are relative between the two stances of the contestants. The conclusion was that the greater the angle of the bow degree, the greater the chance for the pushing force to win. Here the winning criteria is based on when the front/rear foot loses normal pressure, and the front/rear foot slips in the normal direction which results in a loss of balance. In contrast, the greater the angle employed in the sit degree the better the chance for a pulling force to win. For more detail, on the mathematics and mechanics behind these values see reference 1.

It was also observed in the prior study that the use of an arc movement can make the force direction oblique, that is, the force on the arc has both a radial force and a tangential force. The radial force can be used for movements such as "throw like an arrow" or "induce to empty". The tangential force has the ability to deflect forces, and can be

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linked to the sentence “four ounces deflects a thousand strength”: this again being described in more detail in the prior study.¹

However, though the prior study was useful, and many different examples were analyzed, many practitioners have found it difficult to comprehend the numerical values. So, in order to help the reader understand the forces involved it was decided it would be useful to develop a graphical/pictorial model, which should be more intuitive, and help those who are not experts in mechanics to better understand the forces employed.

To begin Torque has three directions, which can be applied in both defense and offense. These are defined in this study as spiral torque, turning torque, and rotating torque¹. These link to the lateral distance of the footprint. In practice, if the distance is larger than the opponent, a releasing spiral torque is advantageous; when the longitudinal distance of the footprint is larger than the opponent, the releasing turning torque is advantageous; and when the connecting distance of the footprint is larger than the opponent, the releasing rotating torque is advantageous¹.

An Example of Force Calculation

In order to be able to focus on just the fighting technique, we assume the two opponents have the same weights and heights. The photo in Fig 1 shows the two opponents are doing push hand, and the Blue figure is in the sit stance, and the Red figure is employing a bow stance. The same image is represented by the stick image in Fig. 1 and the plan view is shown at the bottom of Fig. 1. In this battle, both sides have a chance to control the force direction; and in this situation there is only one pair of forces, which occurs at the mid-point between the two figures. The forces are equal in magnitude and opposite in direction.

Table 1 shows the current interface for the computer program. At present this is not a commercial program, and it was developed only to determine the magnitude of the forces and the force vectors. Using this program, again see reference 1 for more details, it was

possible to calculate the Red opponent’s frontal push force. In this situation with the red opponent employing a faster pushing speed, he is in control and the direction of force is forward horizontal, and the responding passive force of the blue participant is also forward horizontal pushing. Red's ability to push is 136.6 N, and Blue's ability to push is 126.8 N. If Red persists on pushing and reaches Blue's limit at 126.8 N, then Red will win, thus Red's winning factor can numerically be calculated to be $136.6/126.8=1.1$.

Table 2 calculates the case for Blue opponent diagonal pull force. In this situation, due to the faster relative diagonal pulling speed of the Blue opponent, the Blue opponent will be in control; so the direction of force is pulled diagonally backwards, and the passive force of Red is also pulling diagonally backwards. In this case, the Red's ability to pull is 130.7 N, and 65.3 N along the two related perpendicular directions; and Blue's ability to pull is (166.9 N, and 83.5 N along the same perpendicular directions. As can be seen, in this situation, if Blue persists on pulling and reaches Red's limit, which is calculated as 130.7 N and 65.3N, Blue will ultimately be victorious. In this case, mathematically, Blue's winning ratio can be calculated to be $166.9/130.7=1.3$.

Thus, the primary conclusion is that winning will depend on two interconnected points: the choice of stance and the direction of the releasing force. As stated earlier, in Fig 1, the stances of the two sides have been set, but both sides have the possibility to win. The bow stance holder can win if she pushes, and the sit stance holder can win if a diagonal pull is employed - which will be easier to achieve will depend on training and the skill of the participants. It is also clear that, for example, if the Red opponent now knows that the bow stance is more suitable for pushing, then he or she should push, but this is where experience comes in to play. If Blue opponent knows that the sit stance is suitable for diagonal pulling, and Blue finds that Red is pushing, the Blue opponent the needs to use the grab method to change the pushing to diagonal pulling, and if he pulls persistently, he will be able to pull Red opponent down.

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stanceclassification	body mass	friction coefficient	critical level	foot length	front rear feet format	front foot horizontal distance	front foot lateral distance	front foot angle	rear foot horizontal distance	rear foot lateral distance	rear foot angle	gravity center height	1st connecting hand height	1st connecting hand horizontal distance
	m	μ	CrLe	FoLe	Fr/Re	L_x	L_y	FrAn	L_{hx}	L_{hy}	ReAn	H_z	H_1	L_{x1}
	kg	no	nu	m	str	m	m	deg	m	m	deg	m	m	m
right brush kneebow pull/P	60	0.5	1	0.25	RF/LF	0.24	0.12	0	0.56	0.28	-45	0.9	1.1	0.40
left sit stancedivert pull/P	60	0.5	1	0.25	RF/LF	0.56	0.28	0	0.24	0.12	-45	0.9	1.1	0.40

stance classification	1st horizontal force ratio	1st vertical force ratio	1st horizontal force	1st vertical force	Initial force/moment	Normal Stability moment	Critical condition	front foot normal force	rear foot normal force	front foot force tangent	rear foot force tangent	moment in normal direction
	$\epsilon_{FM}(1)$	$\epsilon_{FM}(2)$	F_{x1}	F_{y1}				N_q	N_h	$\tan\phi_q$	$\tan\phi_h$	
	no	no	N	N				N	N	no	no	
right brush knee bow pull/P	1.0	0.5	-130.7	-65.3	-98.0	67.2	1R sli	483.5	39.2	0.24	0.50	-52.6
left sit stance divert pull/P	1.0	0.5	-166.9	-83.5	-125.2	67.2	1N los	301.6	202.9	0.31	0.39	-67.2

Table 2. Calculations for the Blue opponent diagonal pull.

How can we change the push force to diagonal pull force? In this case, Blue needs to make the pull speed/acceleration greater than the red push speed/acceleration. If the red side finds that the blue side has changed to pull, they should immediately respond to change from pull to push. Likewise, to change the diagonal pull force to the push force Red will need to make the push speed (acceleration) greater than the blue pull speed (or acceleration), as this will increase the amount of force employed.

Here, it can be seen that the speed of the force releasing is the key in this specific example. The releasing force must always have a faster speed (acceleration) than the opponent, in order to effectively control the direction and the magnitude of the force.

Graphical method for Winning

These simple calculations give the concept behind Taiji's winning mechanism.

The starting point is "Taiji is a martial art that aims to destroy the balance of the opponent,

while maintaining one's own balance. For this calculation Newton's three laws were used to derive the formula. The software was developed using VBA language.

As can be seen, the software calculation helps to explain why certain moves are better in certain situations, but it is a bit inconvenient, and difficult to read for those Taiji practitioners who either do not have the software, or are unfamiliar with the terminology used.

For this reason a graphical method is presented below. In much the same way, the graphical method can effectively determine the winning mechanism in both simple situations, and with sufficient practice, it can also calculate complex situations, with multiple directions, multiple forces and in highly complex dynamic situations.

The primary aim is that, ultimately, as many people as possible should be able use the graphical method, and as the first step the "releasing force" on balance is considered to be the core for the graphical method.

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The simplest interpretation of balance is that the vertical line of the gravity center is within the supporting area under the action of external force and gravity. The support area this is defined by the “footprints”.

Next, the confrontation between the two opponents is mediated by action forces and reaction forces, and each opponent can be simplified as a free body diagram for analysis.

During a confrontation, the footsteps and footprints are constantly changing, and the relationship between the gravity center and the supporting area will thus also change. The relationship among the gravity center, the support area, and the force direction determines the strengths or weaknesses of both opponents. If you are participating in competitive Taiji, when you gain an advantage and make an offense, you have more confidence to score a point. The advantage is that in the backup of the force direction there is a larger distance from the gravity center to the support area boundary, which is defined as the balance degree (BD).

In the following the Eight standard sentences throw like an arrow; induce to empty; four ounces deflect thousand; optimized strike along connection of the two feet; crotch spiraling to strike narrow stance; crotch turning to assault short stance; waist rotating to beat small stance; buildup advantage to conquer the weak link are now sequentially reviewed.

The software program in [1] delivers detailed calculations. The graphical method in this paper are considered special cases: for simplicity the two opponents have the same weight, same height, and the force and reaction force are horizontal, see Fig 1.1.

To calculate the moment of point O by the law of rotation:

$$\sum M_o = 0 \quad (1)$$

that is (see reference 1 for further details),

$$Fh + fL - WBD = 0 \quad (2)$$

Where F is the critical horizontal action and reaction forces between the two opponents; h is the height of the connecting hand; f is the floor force acting on the one of the feet; L is the distance between the front foot and rear foot, W is the weight; BD is the balance degree. When $f=0$, the opponent starts to lose their footing, and begins to lose balance.

When $f=0$, it is then possible to rewrite equation (2) as,

$$F = \frac{WBD}{h} \quad (3)$$

For Fig 1.1a,

$$F_{SitPush} = \frac{WBD_{SitPush}}{h} \quad (4)$$

For Fig 1.1,

$$F_{BowPush} = \frac{WBD_{BowPush}}{h} \quad (5)$$

Measure from Fig 1.1a and b,

$$BD_{BowPush} > BD_{SitPush} \quad (6)$$

Thus,

$$F_{BowPush} > F_{SitPush} \quad (7)$$

Therefore, when there are pushing forces in the middle, the sit stance will lose balance first, and the bow stance will win.

For Fig 1.1c,

$$F_{SitPull} = \frac{WBD_{SitPull}}{h} \quad (8)$$

For Fig 1.1d,

$$F_{BowPull} = \frac{WBD_{BowPull}}{h} \quad (9)$$

Measuring from Fig 1.1c and d,

$$BD_{SitPull} > BD_{BowPull} \quad (10)$$

So,

$$F_{SitPull} > F_{BowPull} \quad (11)$$

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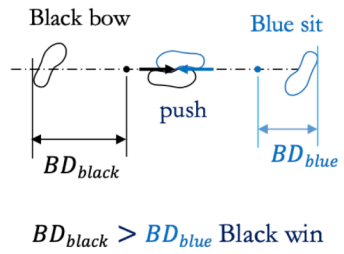
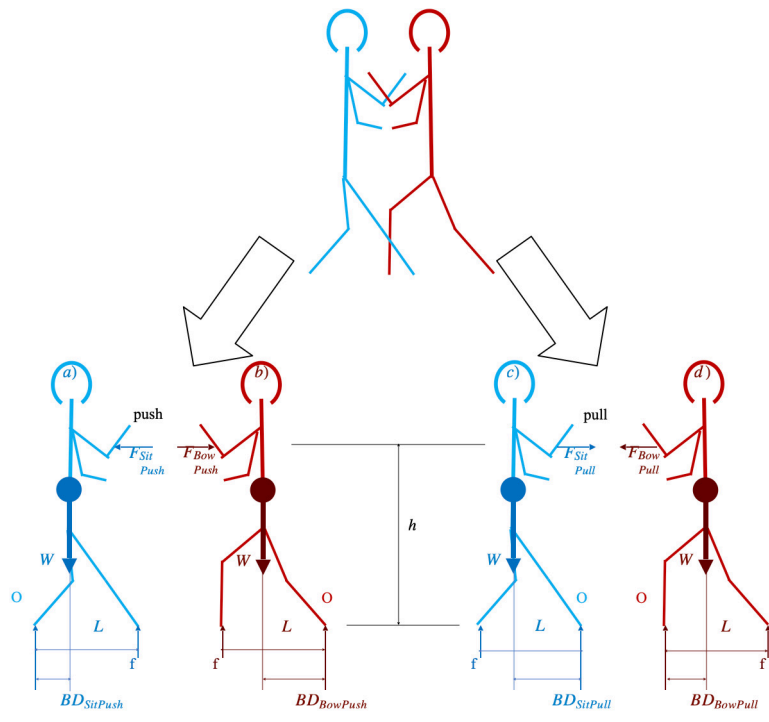


Fig 2 Black bow PUSH Blue sit

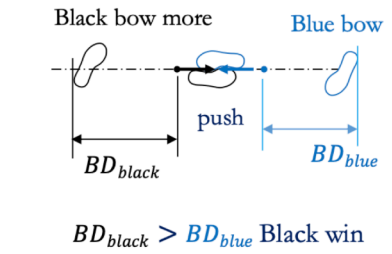


Fig 3 Black bow more PUSH Blue bow

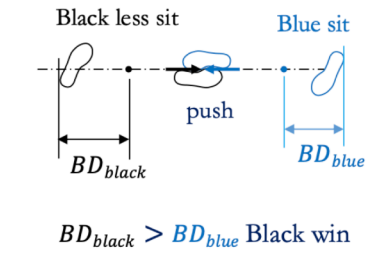


Fig 4 Black sit less PUSH Blue sit

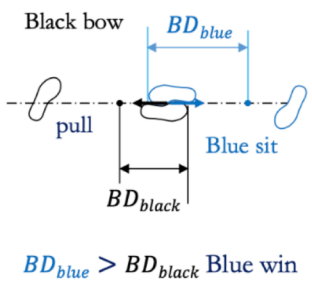


Fig 5 Black bow PULL Blue sit

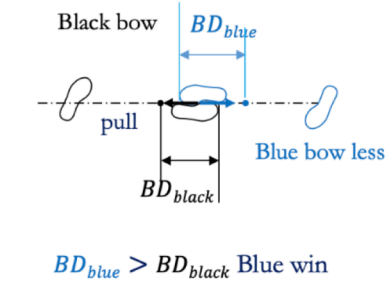


Fig 6 Black bow PULL Blue bow less

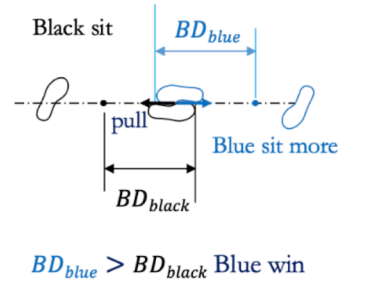


Fig 7 Black sit PULL Blue sit more

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Therefore, when there are pulling forces in the middle, bow stance will lose balance first, and the sit stance wins.

In the following, the figures shown in Fig. 2 through Fig. 30 all have the same convention, but only the bird view figures are provided.

Throw like an arrow (which involves pushing an opponent off balance) means that the distance from the gravity center to the rear foot edge (the push force Balance Degree) should be greater than the opponent's when releasing a push force. In Fig. 2 the pushing force Balance Degree (BD) of the Black's bow stance is greater than that of Blue's sit stance, so Black wins when a pushing force is released (in these situations, whichever side release the force gets the result). In Fig 3., the pushing force Balance Degree of Black's bow stance is greater than that of Blue's bow stance, so Black wins when pushing force is released. In Fig. 4, the pushing force Balance Degree of Black's sit less stance is greater than that of Blue's sit stance, so Black wins when pushing force is released. The bow degree is defined by the distance from the gravity center to the rear foot edge. The pushing force is sent forward, and the bow degree at the rear supports this forward force. Therefore, a larger bow degree is suitable for releasing pushing forces; which gives Black the winning factor. This winning factor is equivalent to the third-order winning factor calculated by the software code¹. From Fig. 2 to Fig. 4, it is shown that the "Black bow PUSH Blue sit" has the highest winning factor. As discussed earlier, the winning factor must be at least greater than 1 to generate a possibility to win. If the winning factor for Black is less than 1, then Black will lose, such as in the "Black bow less PUSH Blue bow".

Induce to empty (to pull the opponent off balance) means that the distance from the gravity center to the front foot edge (the balance degree of the pull force) should be greater than the opponent's employed pull force.

In Fig. 5, the balance degree generated from the pulling force can be measured in the diagram (balance is linked to the balancing of the forces, and the value is directly connected to the distance). So, what we are referencing is a magnitude from the center of gravity. In this case Blue's sit stance is greater than that of Black's bow stance, so Blue wins when a pulling force is released (however, as before, whichever side releases the force can get the result). In Fig. 6 the pulling force balance degree (BD) of Blue's Bow Less stance is greater than that of Black's bow stance, so Blue wins when a pulling force is released. In Fig. 7 the balance degree for the pulling force of Blue's "sit more" stance is greater than that of Black's sit stance, so Blue wins when the pulling force is released. The sit degree is defined as the distance from the gravity center to the front foot edge. The pulling force is sent rearwards, and the sit degree at the front supports the created rearward force. Therefore, a larger sit degree is suitable for a releasing pulling force, and Blue gains the winning factor. From Fig. 5 to Fig. 7, it can be seen that "Black Bow PULL Blue Sit" has the highest winning factor. For Blue, the winning factor must be greater than 1; and if this winning factor is less than 1, then Blue will lose, as seen in "Black Sit PULL Blue Sit Less". It should be noted that the arrows drawn in the diagrams are the forces in the horizontal direction, and these forces are created by the competitors hands. The ability for a competitor to keep their balance refers to the rear foot not becoming detached from the floor. All The actions described in Fig. 2 to Fig. 7 were treated numerically in paper 1, and these diagrams are provided solely to help visualize the mathematics.

Four ounces deflect thousands is a poetic phrase that is often used in martial arts and means use minimal power to defeat a stronger enemy. To "attack the lateral direction to move the opponent off balance" is less poetic but is perhaps more easier to understand for non-martial artists). In this model this means that the distance from the gravity center to the rear foot edge (the balance degree) should be greater than the opponent's when releasing a lateral force. In

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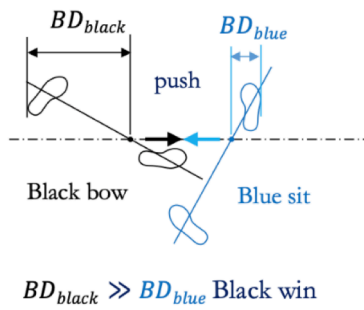


Fig 8 Black longitudinal
PUSH Blue lateral

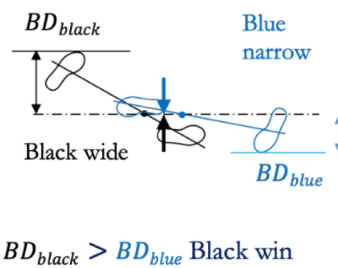


Fig 9 Black wide left
lateralling Blue narrow

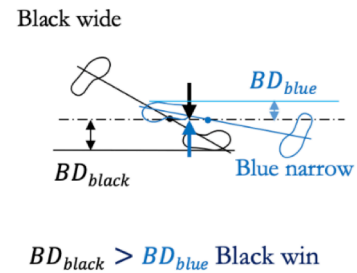


Fig 10 Black wide right
lateralling Blue narrow

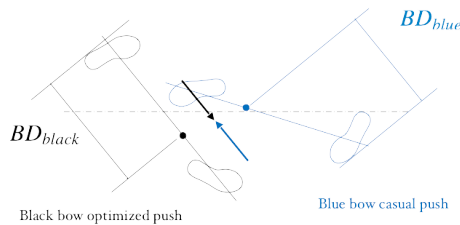
Fig. 8 the pushing force Balance Degree (BD) of Black's bow stance is greater than that of Black's lateral bow stance, so Black will create a winning position when a pushing force is released: as before, whichever side releases the force will get a result. In Fig. 9 the balance degree in a left pushing force for Black's wide bow stance is greater than that in Blue's narrow bow stance, so Black will win when a left pushing force is released. In Fig. 10 the Balance Degree within a right pushing force in Black's wide bow stance is greater than that for Blue's narrow bow stance, so Black will win here when a right pushing force is released. From Fig. 8 to Fig. 10, it can be seen that "Black Longitudinal PUSH Blue Lateral" has the highest winning factor. In order to create the highest winning factor, Black will need to maneuver to the lateral direction and employ the correct timing.

It should be noted that the forces described here were referred to as Critical Forces in reference 1,

The phrase "Optimized strike along connection of the two feet" means that the force direction along the line connecting the two feet will optimize the distance from the Gravity Center to the behind foot edge (Balance Degree), This can result in an advantage over a poorly planned direction in an opponent's footprint. The two feet have the longest distance on the line connecting the feet, and this produces the greatest balance degree. As shown, the force direction along the line connecting the two feet acquired the greatest supporting balance degree, which is the optimized force

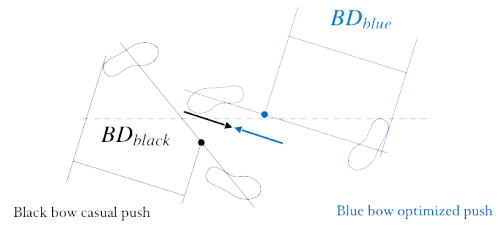
direction. In Figs. 12 and 13, the opponents both use bow stance, but the orientations of the participants differ. Thus, the connecting direction between the opponents is not parallel. In Fig. 12, Black controls the push force direction with the connecting direction on his own side, and Black's push force Balance Degree is greater than the Blue's "casual", unplanned directional push force and Balance Degree, so Black wins when a push force is released. In Fig. 13, Blue controls the push force direction to be the connecting direction on his side, thus the Blue's push force, Balance Degree is greater than the Balance Degree generated by Black's casual directional push force, so Blue wins when a push force is released. Here it is seen that controlling the force direction to the connecting vector/direction is the key to winning. In Figs. 14 and 15, the two opponents again use the same stance, in this case a sit stance, with the orientation slightly offset and the connecting direction between the two opponents is again not parallel. In Fig. 14, Black controls the pull force direction as the connecting direction to his side, and the Black's pull force balance degree is greater than Blue's casual or careless directional pull and the calculated force Balance Degree. So Black will win when a pull force is employed. In Fig. 15, Blue controls the pull force direction as the connecting direction on his side, and the Blue's Balance Degree generated by the pull force is greater than the Black's casual, unplanned directional pull, so Blue wins when a pull force is employed; and again it can be seen that controlling the force direction to the "connecting direction" is the key to winning.

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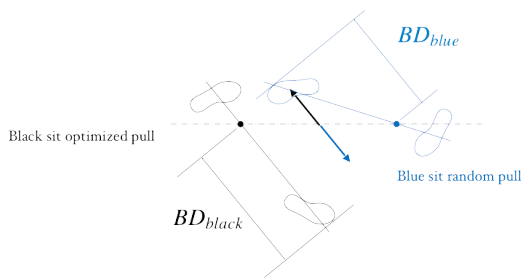
$BD_{black} > BD_{blue}$ Black win

Fig 12 Black bow optimized push Blue random direction



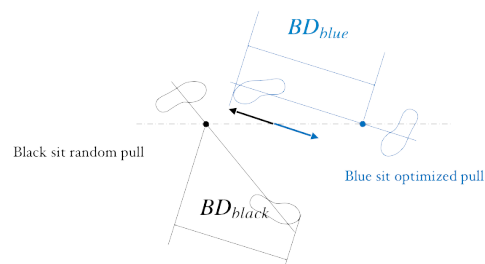
$BD_{blue} > BD_{black}$ Blue win

Fig 13 Black bow casual push Blue optimized direction



$BD_{black} > BD_{blue}$ Black win

Fig 14 Black sit optimized pull Blue random direction



$BD_{blue} > BD_{black}$ Blue win

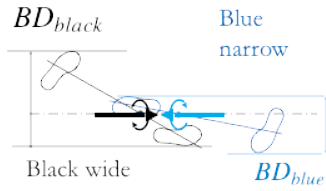
Fig 15 Black sit random pull Blue optimized direction

At this point, the trends shown by these diagrams should now be very clear, but for completeness I will continue to detail the remaining moves.

The Crotch spiraling to strike narrow stance involves the situation where Balance Degree generated from the distance from the Center of Gravity to the lateral direction back foot edge should be greater than the opponent's, when releasing a spiral torque. In Fig. 16 the spiral torque's Balance Degree of the Black's Lateral Direction Wide Bow Stance is greater than that of Blue's Narrow Bow Stance, so Black will win when a spiral torque is released. In Fig. 17 the left lift, right press Balance Degree of Black's Wide Bow Stance is greater than that of Blue's Narrow Bow Stance, so Black will win when a combined left lift, right press force is released. In Fig. 18 the right lift force balance degree of Black's wide bow stance is greater than Balance Degree of Blue's Left Press Force narrow bow stance, so Black will win in this situation when Black Right Lift Blue left press forces are released.

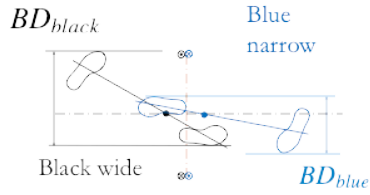
The Crotch turning to assault short stance means that the Balance Degree from the distance from the center of gravity to the back direction backup foot edge should be greater than the opponent's when releasing turn torque. In Fig. 19 the turn torque's balance degree in Black's Front-Rear Orientation wide bow stance is smaller than that shown by the Blue's narrow bow stance, so Blue will win when a turn torque is employed. In Fig. 20, the front lift rear press forces Balance Degree of Black's wide bow stance is less than that of Blue's narrow bow stance, so Blue will win when Front Lift Rear Press forces are released. Finally, in Fig. 21, the Balance Degree from a press force in Black's wide bow stance is smaller than that generated by Balance Degree from Blue's lift force in the narrow bow stance, so Blue will win when Black press Blue lift forces are released.

Waist rotating to beat the small stance means that Balance Degree generated from the distance from the gravity center to the back direction foot edge should be greater



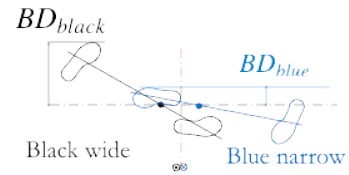
$BD_{black} > BD_{blue}$ Black win

Fig 16 Black wide spiraling
Blue narrow



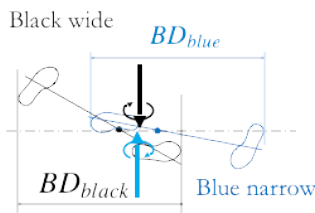
$BD_{black} > BD_{blue}$ Black win

Fig 17 Black wide left lift right
press Blue narrow



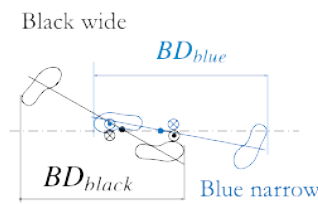
$BD_{black} > BD_{blue}$

Fig 18 Black wide right lift
Blue narrow



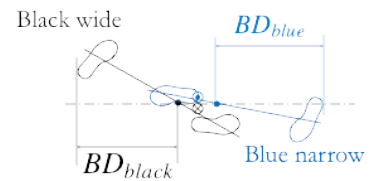
$BD_{blue} > BD_{black}$ Blue win

Fig 19 Black wide turning
Blue narrow



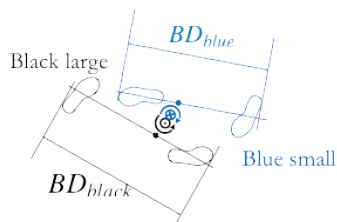
$BD_{blue} > BD_{black}$ Blue win

Fig 20 Black wide front lift
rear press Blue narrow



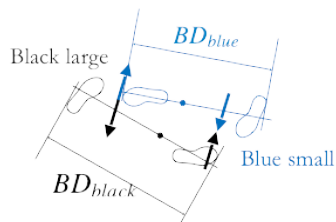
$BD_{blue} > BD_{black}$

Fig 21 Black wide press Blue
narrow



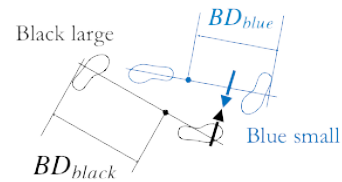
$BD_{black} > BD_{blue}$ Black win

Fig 22 Black large rotating
Blue small



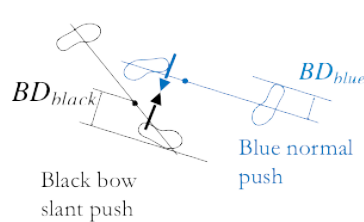
$BD_{black} > BD_{blue}$ Black win

Fig 23 Black large right push
left pull Blue small



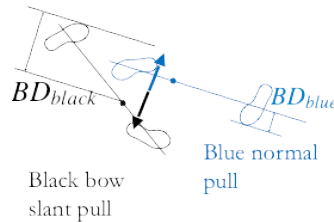
$BD_{black} > BD_{blue}$

Fig 24 Black large right push
Blue small left push



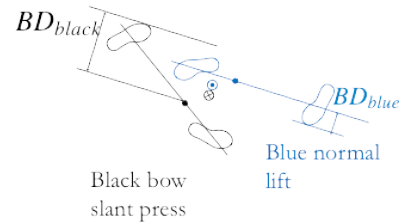
$BD_{black} > BD_{blue}$ Black win

Fig 25 Black bow slant push
Blue normal direction



$BD_{black} > BD_{blue}$ Black win

Fig 26 Black bow slant pull
Blue normal direction



$BD_{black} > BD_{blue}$

Fig 27 Black bow slant press
Blue normal lift

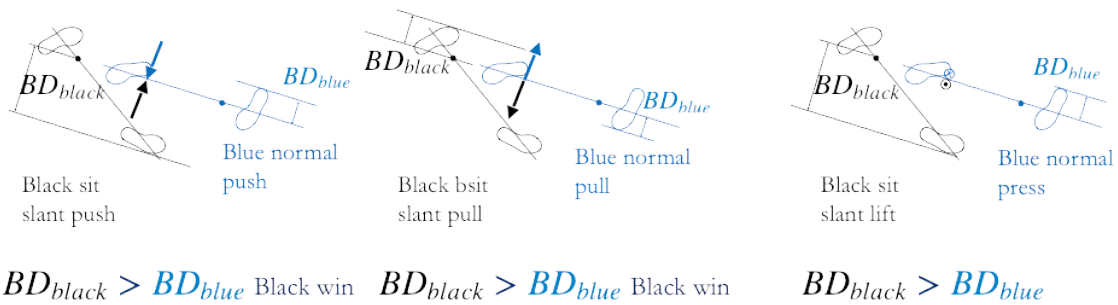


Fig 28 Black sit slant push
Blue normal direction

Fig 29 Black sit slant pull Blue
normal direction

Fig 30 Black sit slant lift Blue
normal press

than the opponent's when releasing rotate torque. In Fig. 22 the rotate torque's Balance Degree of Black's connecting direction large bow stance is greater than that of Blue's small bow stance, so Black wins when a rotation torque is released. In Fig. 23, the Balance Degree from the right push left pull forces of Black's large bow stance is greater than Blue's left push right pull forces balance degree employed in a narrow bow stance, so Black wins, in this case, when Black's right push left pull forces are released. In Fig. 24, the right push force balance degree of Black's large bow stance is greater than Blue's left push force balance degree of narrow bow stance, so Black will win when Black's right push Blue's left push forces are released.

Buildup advantage to conquer the weak link means attacking the opponent's weakness ("thin balance degree") with one's advantage ("thick balance degree"). The seven sentences (throw like an arrow; induce to empty; four ounces deflect thousand; optimized strike along connection of the two feet; crotch spiraling to strike narrow stance; crotch turning to assault short stance; waist rotating to beat small stance) all generate advantages to conquer a weak link.

Generally speaking, the normal direction has shortcomings, whereas the oblique direction gains the relative advantage. In Fig. 25, the Balance Degree of the oblique pushing force of Black's bow stance is greater than Blue's Balance Degree in the bow stance's normal direction. Thus, Black will win when Black release a pushing force toward Blue's normal direction. In Fig. 26, the Balance Degree of the oblique pulling force in Black's bow

stance is greater than the Balance Degree in the normal direction of Blue's bow stance. So, Black will win when Black employs a pulling force toward Blue's normal direction. When Fig. 26 is compared to Fig. 25, it can be seen that the winning factor is high when a pulling force is used; thus it is more beneficial to release a normal pull force than a push force in bow stances. In Fig. 27, the Balance Degree of the press force (the vertical downward force) in Black's oblique direction, when employing a bow stance, is greater than Blue's Balance Degree in the normal direction used in Blue's bow stance; so Black will win when Black employs a pressing force toward Blue's normal direction. Black can also use a two-dimensional pulling-pressing force in combination with Fig. 26 and Fig. 27, which can further increase the odds of winning. In Fig. 28, the Balance Degree when using an oblique pushing force in Black's sit stance is greater than the Balance Degree in Blue's normal direction when employing a sit stance, so Black will win when Black release a pushing force toward Blue's normal direction. In Fig. 29, the Balance Degree for an oblique pulling force in Black's sit stance is greater than the Balance Degree for Blue's normal direction in the sit stance, so Black will win here when Black uses a pulling force directed toward Blue's normal direction. Comparing Fig. 28 to Fig. 29, it can be seen that the winning factor is high when a pushing force is used, so it is more beneficial to release a push force in the normal direction, than to use a pull force in sit stances. In Fig. 30, the Balance Degree for the lift force (the vertical upward force) for Black's oblique direction in a sit stance is greater than Balance Degree for Blue's

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normal direction in the sit stance, so Black wins here when Black releases a lifting force toward Blue's normal direction. Black can also release a two-dimensional pushing-lifting force in combination with Fig 28 and Fig 30, to increase the odds of winning.

Buildup advantages to conquer the weakest link is combined in all eight sentences, in other words, one should assemble our advantages and attack the opponent's weaknesses. The above graphical method is based on an equal-weight-scale confrontation. When the weights of the competitors are unequal, the winning factor should take the weight of both sides into account. Here the winning factor is described by the equation,

$$WF = \frac{W_{black} \times BD_{black}}{W_{blue} \times BD_{blue}}$$

As can be seen, a light athlete, although lighter in weight, could still have a larger WF value than a much heavier opponent, through the use of technique to generate a higher Balance Degree.

Therefore, lighter athletes need to accumulate their own specific advantages and look carefully for their opponent's weaknesses. When their own advantages are higher than the opponent's weaknesses, they can control the direction of force through the use of moves with higher velocity and acceleration, and thus still win the competition. In general, the weak can only beat the strong through making use of this higher Balance Degree (which equates to better technique), to make up for their lack in body weight and strength.

It is believed that for most students of taiji this graphical method is far more intuitive, and simpler to understand. It is also still possible to use these diagrams for computer-based calculations.

Zhuge Liang's "strategies to win thousands of miles away" is based on the idea of using strategies to generate decisive victories. This graphical method reveals, summarizes and improves upon the experience of our predecessors. The graphic method condenses the winning mechanism into eight sentences, which I believe the traditional martial arts world can use it to ratify the inheritance and

knowledge of prior masters; a coach can use it to optimize the training of athletes; the push-hand athletes can use it to help win competitions; the routine athlete can use it to make a move more artistic; and Taiji practitioners of all age levels can use it to coordinate the relationship between the Taiji training of the person's strength, amplitude, frequency and physical fitness. To summarize, the Eight Techniques and Five Footworks are Taiji tactics. The Eight Techniques are methods of the body and hands, and the Eight Techniques are not independent. It cannot be said that the Oblique Pull is not necessarily better than the Bounce; and the Squeeze is not necessarily better than the Oblique Pull. The Five Footworks are methods of footsteps and movements, and the Five Footworks are not independent. Thus, it cannot be said that bow stance is better than sit stance. The combination of the Eight Techniques and Five Footworks provides complete meanings for defense-offense.

Reference

1. Jie Gu, Haixu Li, Jianhui Lu. Calculating Taiji & Martial Art [M]. Amazon Direct Publishing, January 2024.

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Differences in Hamstring Flexibility between Athletes in the Chilean National Wushu Team versus Athletes not in the Chilean National Wushu Team

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Abstract—This study evaluates hamstring flexibility among junior athletes practicing modern Taolu Wushu using the Sit and Reach test. The cross-sectional analysis included 32 participants, evenly split between members and non-members of the national team. Results demonstrated that national team members exhibited significantly higher flexibility levels compared to their non-team counterparts ($p < .01$, $d = 0.707$), highlighting hamstring flexibility as a critical factor for national team selection in Wushu. Spearman's correlation analyses further revealed significant associations between flexibility and phenotypic variables such as age and height, particularly within the national team cohort, suggesting these traits may influence or contribute to the observed differences in flexibility. These findings support the use of the Sit and Reach test as a simple yet effective tool for assessing hamstring flexibility, which can help coaches identify potential national team candidates and tailor training programs to enhance flexibility. The outcomes align with previous research indicating higher flexibility levels in athletes of national teams across various sports, underscoring the importance of flexibility in competitive success and athlete selection processes.

Introduction

Modern Competitive Wushu, based on traditional Chinese martial arts, has gained significant international recognition over recent decades, with numerous national and international competitions emerging. One key discipline within Modern Wushu is Taolu, which involves performing choreographed movements against imaginary opponents, and demands high technical, performance, and difficulty standards¹⁻³. To excel at the highest levels, Wushu athletes must develop not only their technical skills and lower limb power but crucially, their flexibility—particularly hamstring flexibility, which is vital for performing complex aerial kicks requiring extensive hip flexion and knee extension⁴⁻⁶.

Furthermore, young athletes' athletic development plan should include training strategies for optimal development of the hamstrings muscles⁷. The hamstrings muscles origin from the ischial tuberosity, and thus hamstring flexibility can affect posture and spine alignment during growth; for example, noted that an excessive shortening of these muscles increases the tension on the pelvis and, consequently, may produce changes in the spine morphology^{8,9}. Therefore, it was deduced that hamstring flexibility training should be included early in youth soccer training programs, as they tend to become tighter throughout their biological maturation, but it is unclear

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whether this is due to physical growth or it is influenced by daily routine and practice¹⁰. Even though hamstring injuries occur at a lower incidence in youth players than in adult populations, a study that was conducted among 623 young players of Barcelona Football Club revealed an incidence of damage estimate at 0.041 for biceps femoris and 0.061 for semitendinosus and semimembranosus for every 1,000 hours of soccer practice¹¹.

This study aims to add to the prior studies, and shed light on the critical role of hamstring flexibility in Wushu by comparing athletes from the Chilean National Team with those who were not selected. By identifying potential disparities in flexibility, this research seeks to ascertain whether hamstring flexibility serves as a predictive measure for national team selection. It is hypothesized that athletes in the National Team will demonstrate superior flexibility compared to their non-member counterparts, suggesting that targeted flexibility training should be a focal point in Wushu training regimes.

Methods

For the preliminary study we employed a quantitative, descriptive, cross-sectional, and non-experimental research design. The participants were Junior Wushu athletes in Modern Taolu who were participants in the Second Modern Wushu Championship of Chile in 2022. The sample consisted of athletes with varying ages, years of training, genders, clubs, and anthropometric measurements. A detailed description of the sample characteristics is provided in the Results section. The methodology used in this study was approved by the Institutional Board of the Chilean Wushu Federation and followed the Declaration of Helsinki.

The Sit and Reach test (Eurofit) was used to assess hamstring flexibility in all studied groups. The test was conducted during the National Wushu Championship in Modern Taolu, in which the junior Wushu athletes participated. All measurements were taken before the athletes' competition events. A standardized 10-minute warm-up was

performed before the assessment, with the test procedure explained to the participants and administered according to the appropriate protocol. The box utilized was 35 x 45 x 32 centimeters with starting measurement at the 15cm mark. Three trials were allowed for each individual with the maximum value used for statistical analysis. Finally, the test was conducted by two health-trained professionals, who were trained in the fields of physical therapy and physical education (HT & JS).

Statistical Analysis

Microsoft Excel was used to input the data. Subsequently, the data was imported into RStudio for the statistical analysis using the R programming language¹². Descriptive statistics, including medians and interquartile ranges (IQR), were initially calculated to summarize the demographic and physical characteristics of the athletes. This was followed by inferential statistical tests to explore the differences in hamstring flexibility between junior Wushu athletes who were part of the national team and those who were not. To examine the differences between the two groups (National Team vs. Non-Team), a two-sample Mann-Whitney U test was employed due to the non-normal distribution of the Sit and Reach test scores. This non-parametric test was chosen to compare the median scores of hamstring flexibility, providing a robust method for analyzing skewed data or data with outliers. Following the comparative analysis, Spearman's rank correlation coefficients were calculated to assess the relationships between flexibility (as measured by the Sit and Reach scores) and several phenotypic variables including age, height, and training experience. Spearman's method was selected due to its non-parametric nature, making it suitable for data that do not meet the assumptions of normality and linearity required for Pearson's correlation. Subgroup analyses were conducted to further explore these relationships within different cohorts defined by team membership and sex. This approach allowed for an assessment of how these variables interacted with flexibility within and across different groups. Statistical significance was set at $p < .05$ for all tests.

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Characteristic	No Team, N = 16 ¹	National Team, N = 16 ¹	p-value ²
Age (yrs)	10.50 (6.00, 12.00)	12.50 (9.00, 17.00)	.011
Weight (kg)	40 (22, 63)	48 (33, 85)	.11
Height (cm)	1.41 (1.18, 1.67)	1.51 (1.31, 1.86)	.048
BMI (kg/m ²)	19.09 (15.80, 29.50)	20.61 (16.91, 24.84)	.4
Training experience (yrs)	0.75 (0.50, 4.00)	3.00 (1.00, 10.00)	<.001
Sit and Reach score (cm)	17 (4, 31)	28 (21, 41)	<.001
Biological Sex			.7
Female	6 (38%)	7 (44%)	
Male	10 (63%)	9 (56%)	

¹ Median (Range); n (%)

² Wilcoxon rank sum test; Wilcoxon rank sum exact test; Pearson's Chi-squared test

Table 1. Descriptive of Junior Wushu Athletes.

Results from the statistical tests were used to guide conclusions about the factors influencing hamstring flexibility in junior Wushu athletes, and to formulate recommendations for training practices.

Results - Demographics

The study encompassed 32 junior Wushu athletes, categorized by group affiliation and sex. Sixteen athletes were part of the national team, and sixteen were not, with a gender distribution of 13 females and 19 males. These athletes were further divided into four subgroups: 10 male athletes not on the national team, 9 male athletes on the national team, 6 female athletes not on the team, and 7 female athletes on the national team.

Demographic and physical characteristics varied notably between groups. The median age for athletes not on the national team was 10.50 years (range 6.00-12.00 years) compared to 12.50 years (range 9.00-17.00 years) for those on the national team. Median weight was 40 kg (range 22-63 kg) for non national team athletes and 48 kg (range 33-

85 kg) for national team members. Heights averaged at 1.41 meters (range 1.18-1.67 meters) for athletes not on the national team and 1.51 meters (range 1.31-1.86 meters) for those on the national team. The median BMI was slightly higher in the national team group at 20.61 kg/m² (range 16.91-24.84 kg/m²) compared to 19.09 kg/m² (range 15.80-29.50 kg/m²) for non national team members. Training experience also showed significant differences, with non national team athletes having a median of 0.75 years (range 0.50-4.00 years) versus 3.00 years (range 1.00-10.00 years) for national team athletes.

Sit and Reach test scores further highlighted these disparities, with national team athletes achieving a median score of 28 cm (range 21-41 cm) compared to 17 cm (range 4-31 cm) for those not on the national team, underscoring the better flexibility in the national team. These demographic and performance metrics are detailed in Table 1, providing a comprehensive overview of the athlete's characteristics and their performance variability.

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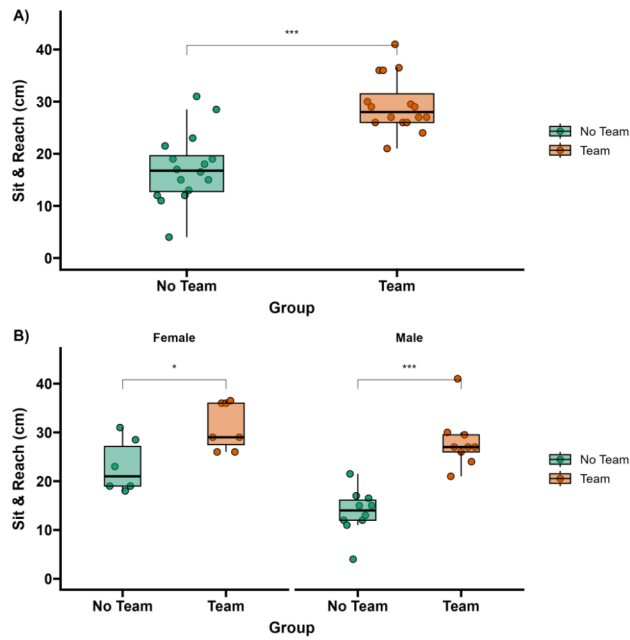


Figure 1. A) comparison of hamstring flexibility between groups; B) comparison between groups by sex.

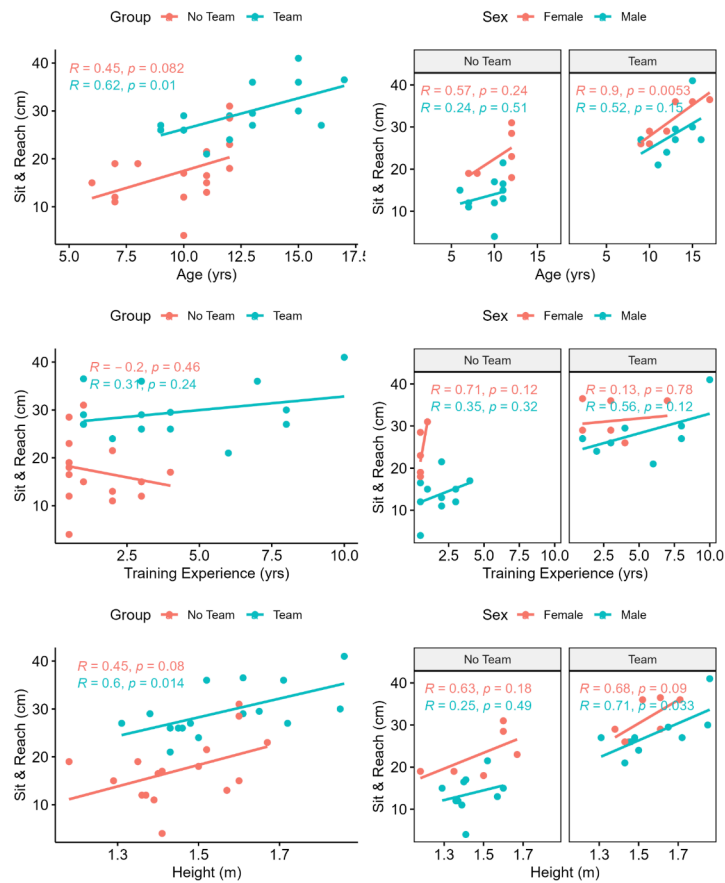


Figure 2. Associations between Sit & Reach (cm) with Age (yrs) (top panel), Training experience (yrs) (medium panel), and Height (cm) (lower panel) as a group and by biological sex.

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Group Differences in Hamstring Flexibility

In this study, we investigated the effects of group affiliation and biological sex on the flexibility of junior Wushu athletes using the Sit and Reach test. Two-way ANOVA results showed significant main effects for both Group ($F(1, 28) = 46.004, p < .001$) and Sex ($F(1, 28) = 11.364, p = .0022$), indicating substantial differences in flexibility based on both factors, while the interaction effect was not significant ($F(1, 28) = 2.866, p = .1015$). To confirm these findings under the assumption of non-normal data distributions, we employed a Wilcoxon rank-sum test, which corroborated the ANOVA results, demonstrating a significant difference in Sit and Reach scores between the National Team and Non-Team groups ($W = 22, p < .001$). The effect size calculated via the Wilcoxon method was substantial ($d = 0.707$), further substantiating the practical significance of group affiliation in influencing athlete flexibility, irrespective of sex. These findings thus support prior studies, and membership in the National Team can be associated with superior flexibility, highlighting the potential benefits of structured training programs in enhancing athletic performance.

Correlation Analyzes

In an analysis of junior Wushu athletes, Spearman's correlation coefficients were calculated to assess the relationships between Sit & Reach flexibility scores and several phenotypic variables across different subgroups, categorized by team membership and sex. The results revealed a significant positive correlation between age and Sit & Reach scores among athletes in the national team ($R = 0.62, p = 0.01$), suggesting that older athletes in this group tend to exhibit greater flexibility. Conversely, this correlation was not significant for athletes not on the team ($R = 0.45, p = 0.082$). With respect to flexibility, training experience did not show a significant correlation with Sit & Reach scores in either group, indicating that the length of training does not have a discernible impact on flexibility within this sample (Team: $R = 0.31, p = 0.24$; No Team: $R = -0.2, p = .46$). However, height was

significantly correlated with Sit & Reach scores in the national team ($R = 0.6, p = .014$), but not in the non-team group ($R = 0.45, p = .08$), suggesting that taller athletes within the national team are more likely to achieve better flexibility scores. These findings highlight the influence of age and physical stature on flexibility in competitive athletes, with varying impacts observed across different group and sex categories.

Discussion

This study examined the differences in hamstring flexibility, as measured by the Sit and Reach test, between junior Wushu athletes who are part of the national team and those who are not. Our findings revealed significant differences, with national team athletes demonstrating markedly greater flexibility. This underscores the potential importance of hamstring flexibility in enhancing performance at the national level, aligning with the inclusion of flexibility tests in selection criteria by elite teams such as the Beijing Wushu Team. Further analysis using Spearman correlations explored relationships between flexibility and phenotypic variables such as age, height, and training experience. Notably, age and height in team athletes showed significant positive correlations with flexibility, suggesting that these factors may influence or contribute to the superior performance in flexibility tests observed among national team members. However, training experience, did not correlate significantly with flexibility, indicating that other factors, possibly including inherent physiological characteristics or training quality, might play more pivotal roles.

Our study's findings are consistent with previous research on hamstring flexibility in athletes from various sports. For instance, a study found that karate athletes had significantly better hamstring flexibility than non-athletes, as measured by the Sit and Reach test⁸. Similarly, another study reported that high-level soccer players exhibited greater hamstring flexibility compared to lower-level players¹³. Moreover, hamstring flexibility has been shown to be an essential factor for athletic performance in several

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sports, including gymnastics, dance, and martial arts^{14,15}. Improved flexibility can lead to better technique execution, reduced risk of injury, and enhanced overall performance¹⁶. Our study extends this research by focusing on junior Wushu athletes and demonstrating a significant difference in hamstring flexibility between those who are part of the national team and those who are not. This finding reinforces the importance of hamstring flexibility in athletic performance and highlights the need for targeted flexibility training in Wushu and other sports that require high levels of flexibility.

Our study employed the Eurofit Test Battery Sit and Reach protocol (Committee of Experts on Sports Research, 1988), wherein the "0" point for initiating measurements was positioned at 15 cm from the edge of the feet, differing from the ACSM protocol, which places it at 23 cm (9 inches) from the edge of the feet¹⁷. To compare our results with other studies conducted using the ACSM protocol, we adjusted the corresponding values. Consequently, we observed that the adjusted mean values of Chilean Team athletes, at 37.4 cm, were similar to those found by Sukanti et al.¹⁸ in their study of 50 Indonesian wushu athletes aged between 8 and 15 years, who achieved 36 cm. The values for Chilean Non-Team athletes were lower than those found in this study, at 25.2 cm. On the other hand, Huang et al. assessed 30 Taiwanese national ranking wushu athletes aged between 12 and 15 years, who had a mean of 47.6 cm, demonstrating a significant superiority compared to the values discovered in our Chilean study¹⁹. Nonetheless, the values for Chilean wushu athletes in the Team from our research showed higher values than basketball athletes (mean = 31.5 cm), track and field athletes (mean = 30.47 cm), and general student athletes (mean = 30.27 cm) evaluated in Huang's study. An intriguing observation is that the values for Chilean junior wushu athletes, both Team and Non-Team, are considerably lower than the values found by Aedo-Muñoz²⁰ in their study of 424 Chilean athletes aged between 12 and 18 years from various sports (aquatic sports, hunting, extreme sports, combat sports, team sports,

track and field, and artistic gymnastics), which show mean values ranging between 45 and 53 cm for the evaluated athletes, even in those sports that do not require significant hamstring flexibility, such as hunting or team sports²⁰.

However, any discussion generated by comparing values with other authors should be approached cautiously, as the samples do differ in size, age, training duration, and other factors. Moreover, in the case of our study, it should be considered that the evaluated athletes were only recently returning to competitions following the confinement due to the Covid-19 pandemic, and therefore many stated their athletic performance levels were not at their usual standards. Lastly, the discrepancy between scores could mostly be attributed to differences in protocols from both studies, the ACSM and the Eurofit Test Battery Sit and Reach protocol.

Limitations and Future Directions

The study is not without limitations. The small sample size may restrict the generalizability of our findings, and the cross-sectional design limits causal inferences. Future research should include larger, more diverse samples and consider longitudinal designs to better understand the development of flexibility over time and its impact on national team selection. Additionally, considering other performance-influencing factors such as technical skills, psychological attributes, and overall physical conditioning in conjunction with flexibility could provide a more comprehensive understanding of what influences junior Wushu athletes' performance.

Conclusions

In conclusion, our study demonstrates that significant differences in hamstring flexibility exist between junior Wushu athletes in the national team and those who are not, with flexibility potentially serving as a predictive factor for national team membership. This highlights the importance of incorporating flexibility training into

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coaching and training regimes for athletes aspiring to reach national levels. Further studies are recommended to explore additional factors influencing athletic performance and to confirm the predictive value of flexibility in athlete selection processes.

References

1. Montalvo S., Tan E., Conde D., Mejia-Ibarra G., Dorgo S., Injury Rates Among Elite Wushu Kung-fu Martial Artists And Access To Health Care: 3847 Board #164 May 30 8:00 AM - 9:30 AM. *Med. Sci. Sports Exerc.*, 2020; 52, 1057-1057. doi:10.1249/01.mss.0000687104.29789.20
2. Montalvo S., Tan E., Pok C., Neuromuscular Responses To A Competitive Wushu Routine During The IWUF Wushu Taolu Virtual Competition: 808. *Med. Sci. Sports Exerc.*, 2022; 54(9S), 189.
3. Tan E.C., Beaven C.M., Li C.T.C., McGuigan M.R., Cronin J.B., Strength and Power Profiles of World Class Taolu Athletes, Published online 2017.
4. Benouaich L, Rouch P, Natta F, Thoreux P. Spring jumpers vs power jumpers: ankle joint behavior in elite wushu athletes and implications for performance and injury risk. *Comput. Methods Biomech. Biomed. Engin.*, 2015; 18,1886-1887.
5. Cheah B.C., Loh T.C., Tan C.H.E., Beaven C.M., Comparison of eccentric utilization ratio of elite karate (kata) with elite Wushu athletes. *Rev. Artes Marciales Asiáticas*. 2016; 11(2s), 22-23.
6. Tan E.C., Vallejo F.T., Beaven C.M., Force and Velocity Profiling of World Class Taolu Wushu Athletes, Published online 2016.
7. Mayorga-Vega D., Merino-Marban R., Manzano-Lagunas J., Blanco H., Viciano J., Effects of a stretching development and maintenance program on hamstring extensibility in schoolchildren: a cluster-randomized controlled trial. *J. Sports Sci. Med.* 2016; 15(1), 65.
8. López-Miñarro P., Muyor J., Belmonte F., Alacid F., Acute effects of hamstring stretching on sagittal spinal curvatures and pelvic tilt. *J Hum Kinet.* 2012; 31(2012), 69-78.
9. Cini A., Lima C.S., Flexibility and Tendon: A Brief Review, *Rev. Bras. Ciênc E Mov.* 2022, 30(1).
10. Zakas A., Galazoulas C., Grammatikopoulou M.G., Vergou A., Effects of stretching exercise during strength training in prepubertal, pubertal and adolescent boys. *J Bodyw Mov Ther.* 2002; 6(3), 170-176.
11. Valle X., Malliaropoulos N., Párraga Botero J.D., et al. Hamstring and other thigh injuries in children and young athletes. *Scand. J. Med. Sci. Sports.* 2018; 28(12), 2630-2637.
12. Rstudio T. RStudio: Integrated Development for R. Published online 2020. <http://www.rstudio.com/>
13. Muyor J.M., Vaquero-Cristóbal R., Alacid F., López-Miñarro P.A., Criterion-related validity of sit-and-reach and toe-touch tests as a measure of hamstring extensibility in athletes. *J Strength Cond Res.* 2014; 28(2), 546-555.
14. Lima C.D., Ruas C.V., Behm D.G., Brown L.E., Acute effects of stretching on flexibility and performance: a narrative review. *J Sci Sport Exerc.* 2019; 1(1), 29-37.
15. Wang D., Lin X.M., Kulmala J.P., Juha-Pekka Kulmala, Pesola A.J., Gao Y., Can the Functional Movement Screen Method Identify Previously Injured Wushu Athletes. *Int J Environ Res Public Health.* 2021; 18(2), 721. doi:10.3390/ijerph18020721
16. Witvrouw E., Danneels L., Asselman P., D'Have T., Cambier D. Muscle flexibility as a risk factor for developing muscle injuries in male professional soccer players: a prospective study. *Am J Sports Med.* 2003; 31(1), 41-46.
17. Carrasco M., Sanz-Arribas I., Martínez-de-Haro V., Cid-Yagüe L., Martínez-González-Moro I. Does the " sit and reach" test measures flexibility? A case study. *Rev Int Med Cienc Act Fis DEPORTE.* 2013; 13(52), 749-770.
18. Sukamti E.R., Budiarti R., Nugroho W., Miftachurochmah Y, Azeem K., A study

DOI:10.57612/JS24.JTS.03.03

- of physical fitness characteristics of junior wushu players depend on sex difference. *J Keolahragaan*. 2022; 10(1), 31-39.
19. Huang H.C., Wu WL, Chang Y.K., Chu I.H., Physical fitness characteristics of adolescent wushu athletes. *J Sports Med Phys Fitness*. 2016; 58(4), 399-406.
 20. Aedo-Muñoz E., Araya-Ibacache M., Miarka B., et al. Effect of sex differences in sports groups on hamstring flexibility based on the sitreach test: new parameters for Chilean athletes. *J Phys Educ Sport*. 2019;19(4).

A Human Body Model for Calculating Taiji

