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The Effect of Specific Training Programs to Improve Agility and Flexibility of Wushu Taolu Athletes

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Abstract

Background and Aim: In the realm of Wushu sports, the essential professional attributes of a Wushu Taolu athlete encompass flexibility and agility. In contemporary Wushu Taolu training, there is a prevailing emphasis on achieving the intricacies of captivating aesthetics, often neglecting the foundational skills of Wushu Taolu. Consequently, many Wushu athletes encounter a range of issues. The absence of fundamental skills can result in a deficiency in the physical aptitude of Wushu Taolu athletes, leading to inadequate execution of movements, a lack of fluidity, and subpar completion quality. These shortcomings can adversely impact the overall sports proficiency of athletes. This study aims to address this by concentrating on the development and implementation of a training program specifically targeting the basic skills of Wushu Taolu, to significantly enhance the agility and flexibility of Wushu Taolu athletes.

Materials and Methods: This study is an experimental study. The participants of this study are 30 Wushu Taolu athletes from Northwest Normal University, 8 professional Wushu coaches, 4 teachers of Wushu direction in professional sports colleges and universities, and 3 professors in the direction of physical training, which makes a total of 15 experts. This study used focus groups to develop and improve training programs through expert interviews and experimental analysis with an IOC value of 0.82. This study mainly used ANOVA to analyze the results of the pre-test, 4 weeks post-test, and post-test.

Results: The results showed that the flexibility and agility of Wushu Taolu athletes were effectively improved by seated forward body flexion and T-word agility test after specific Wushu basic training, and the improvement of flexibility and agility can help athletes to improve their sports level and get better performance in the competition.

Conclusion: After 8 weeks of Wushu training, these 30 Wushu Taolu athletes were tested again for agility and flexibility. The study analyzed the differences and effects of agility and flexibility before and after training. The comparison between before and after training fully proved that basic Wushu training can effectively improve the agility and flexibility of Wushu sparring athletes.

Keywords: Wushu; Taolu; Specific Training Programs; Flexibility; Agility

Introduction

Wushu is one of the important parts of the excellent traditional culture of the Chinese nation. It focuses on “internal and external cultivation”, and emphasizes “internal training of the spirit, external training of the muscles and bones” (Cai, 2013). Wushu mainly includes two forms of sports: technical sparring and routines, and Wushu Taolu is a complete set of practice forms that are based on technical sparring movements and are compiled with the changing laws of contradictory movements such as an attack, defense, advance, and retreat, movement, static, speed, rigidity, softness, and emptiness, and are also referred to as “routines sports”, and also called the “set movement”. It is generally believed that the set movement is a highly refined and artistic reproduction of technical combat, which originates from technical combat, but also higher than technical combat, is the highest form of expression of martial arts. The reason why it is the highest form of expression of martial arts lies in the fact that it comes from technical combat and is further regularized and artistic. Just as literature and art come from life and above life, the majority of movements in the set from the technical combat, still maintain the practical side of the technical combat, both offensive and defensive characteristics, but also the fitness significance of a sport. It is one of the three main forms of modern Wushu, which is divided into two categories: boxing routines and equipment routines, and three types of single practice routines, sparring routines, and collective routines, in Wushu sets of boxing sets that contain long fist sets, south fist sets, taijiquan sets, equipment sets of knife sets, gun sets, sword sets, and stick sets. In Chinese Wushu each family and school has the performance of their sect characteristics of the routines, Wushu Taolu has a long history, its prototype when in the Tang and Song dynasties before that has appeared, and later there was "knife dance", "sword dance" and sticks and other "eighteen kinds of weaponry "exercise routines were introduced one after another. Based on martial arts "martial arts dance" in the Tang Dynasty was quite prevalent, Tang Poetry has a famous poem describing the sword dance: "Fire Huo like Yi shoots the nine suns down, as the group of emperors, horses and dragons soar; come as thunder to collect the

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wrath of the strike as the river and the sea condenses clear light." It shows that the content of the sword dance at that time was rich and wonderful. The basic skills of Wushu Taolu are the most basic and important part of the technical training process of Wushu sports, is the main content of the special training of all parts of the body, it is not only very important for learning the classic long fist routines, attack and defense techniques, and improving the level of technology, but it is also the basis for learning other fist and armament routines". Wushu practitioners often say that "if you don't slip your legs in boxing, you are an impostor in old age; if you don't activate your waist in practicing boxing, you are not high in art after all" (Cai, 2013). This fully illustrates that basic training in Wushu is the first condition for improving the level of Wushu. Wushu basic training includes seven major parts: leg, waist, basic footwork, staking, tripod arm, hand-eye, and boxing. In the process of Wushu basic training, the basic qualities of the body such as extension, flexibility, dexterity, and strength can be obtained.

In Wushu sports, flexibility is an indispensable professional quality of Wushu set athletes, and it is also the foundation of other sports programs. Wushu set to flexibility quality requirements are particularly high, therefore, scientific training is very important, in the Wushu special physical quality training, flexibility exercises account for a large proportion. Flexibility is good, can ensure that Wushu sets athletes fast, accurately, coordinated, and coherent to complete a series of technical movements, showing a high level of sports technology, and is conducive to avoiding injury accidents, to ensure and extend the life of the sport. Poor flexibility will limit the amplitude of the movement technical action is limited, affects the coordination of the movement of the force, the movement of stiffness, strength is not smooth, and movement is not coordinated other ills, are also caused by the movement of technical errors, muscle ligament strains. Agility quality is a Wushu athlete correctly and quickly masters the technical movement—one of the important qualities to complete the set. The training should be based on the characteristics of the Wushu set movement, strengthen the accuracy of time and space judgment, and each training should have a clear provision for the direction, amplitude, speed, and rhythm of the movement to achieve the purpose of effectively improving the quality of agility. In the current landscape of Wushu Taolu training, there is a predominant emphasis on pursuing the "novelty of high difficulty and beauty." Unfortunately, this focus tends to neglect the fundamental skills in Wushu Taolu, resulting in a myriad of issues for many Wushu athletes. Insufficient attention to basic skills can compromise the physical fitness of Wushu Taolu athletes, leading to inadequacies in executing movements within Wushu Taolu exercises. In response to this challenge, this study aims to concentrate on the development and implementation of a training program specifically tailored to enhance the basic skills of Wushu Taolu. The primary objective is to effectively improve the agility and flexibility of Wushu Taolu athletes, ultimately elevating their athletic proficiency and achieving better results in overall competitions, by analyzing 30 the training of Wushu Taolu athletes of Northwest Normal University in Gansu, China by using the specific training programs to provide theoretical reference for future training of athletes and coaches. A set of excellent, reasonable, and scientific Wushu Taolu can better show the competitive and ornamental nature and is also the core factor of the success of Wushu Taolu.

In summary, Wushu stands as a crucial component of China's traditional culture, embodying the principles of "internal and external cultivation." It encompasses technical sparring and routines, with Wushu Taolu representing a refined and artistic expression of martial arts through set movements. The historical evolution of Wushu Taolu, rooted in the Tang and Song dynasties, highlights its rich diversity, including various weaponry routines. Despite its artistic nature, fundamental skills in Wushu, especially in Wushu Taolu, are considered paramount for both technical proficiency and overall athletic development. The contemporary landscape, however, reveals a potential imbalance with a predominant focus on difficulty and aesthetics, necessitating a renewed emphasis on basic skills. This research aims to address this gap by developing a tailored training program to enhance the fundamental skills of Wushu Taolu athletes, particularly focusing on agility and flexibility, essential for optimal performance and injury prevention. The analysis of the training of Wushu Taolu athletes at Northwest Normal University in Gansu, China, serves as a valuable foundation for providing theoretical insights for future athlete and coach training.

In this paper, the literature method, experimental method, mathematical statistics, and analytical method were used, mainly from 30 Wushu Taolu athletes from Northwest Normal University in Gansu, China. After 8 weeks of Wushu training, agility and flexibility tests were again conducted on these 30 Wushu Taolu athletes. The study analyzed the improvement and effects of agility and flexibility before and after training. Through the comparison between before and after training, it is fully proved that the specific training programs in Wushu Basic can effectively improve the agility and flexibility of Wushu Taolu athletes.

Objective

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Main Objective

To study the effect of specific training programs to improve the agility and flexibility of Wushu Taolu athletes.

Subsidiary Objectives

1. To survey the problem of agility and flexibility of Wushu Taolu athletes.
2. To construct specific training programs to improve the agility and flexibility of Wushu Taolu athletes.
3. To compare the agility and flexibility of Wushu Taolu athletes before and after a specific training program.

Literature Review

1. Development and Current Status of Chinese Wushu

Wushu originated in China, and the origin of Chinese Wushu can be traced back to primitive society. As early as tens of thousands of years ago, the human ancestors of the poor living environment can be said to be more beasts and fewer people, to survive in the "natural law of the fittest," the human race had to fight with nature, learned to jump and roll, punching and kicking, finger scratching and palm striking and a series of primary means of attack and defense. Later, to the Stone Age, mankind began to use stone or wooden tools, the process of the formation of the unarmed or the use of equipment fighting and killing skills, was the germ of Wushu. From the existing archaeological discoveries, in the Paleolithic and Neolithic eras, there were stone balls, stone axes, stone knives, and other kinds of stone weapons, this part of the original production tools and weapons, evolved into the later Wushu equipment. After a long period of historical development, the Chinese Wushu gradually formed a perfect cultural system during the Song, Yuan, and Ming dynasties. As Chinese Wushu as an organic part of Chinese culture and a unique form of expression, is in the traditional culture of the Chinese people in the atmosphere of development, so in its thousands of years of historical development process, will inevitably be integrated into the national customs, habits, psychology and feelings and other factors. This traditional cultural factor, specifically in philosophy, ethics, aesthetics, and other aspects, from the cultural connotation of the development of Wushu, reflects the basic characteristics of the entire Chinese culture. This is also an important condition for Chinese traditional Wushu to be formed into a huge system with national cultural independence and rich connotations under complicated historical conditions and background. (Dai, 2017)

Wushu is a sport with rich connotations and similar skills and principles, and there is a sense of "no end to the art" after initiation. Mass Wushu activities have become a good means for people to exchange skills, ideas, and friendships. With the wide spread of Wushu in the world, it can also promote exchanges with foreign Wushu enthusiasts. Wushu enthusiasts in many countries love Wushu routines and also love Wushu Sanshou, and they learn to know Chinese culture and explore the civilization of the East through practicing Wushu. Wushu plays an increasingly important role in friendly exchanges with people from all over the world through sports competitions and cultural exchanges. (Wang, 2021)

2. Basic Wushu Training

Wushu basic skills are the prerequisite and foundation for the development of specialized physical quality, further study of Wushu routines, and improvement of technical level. Scientific research on the basic skills of Wushu, applying the development and change rules of basic skills, learning and mastering the scientific training methods of basic skills, and strengthening the training of basic skills of Wushu are the important issues for the development and improvement of the technical level of Wushu sports. (Zhang, 2014) With the development of competitive Wushu routines in the direction of high, difficult, beautiful, and new, there are more and more difficult movements in optional routines, and people pay more and more attention to the quality of the difficult movements, thus neglecting the training of basic skills. Basic skills are the basic elements of Wushu routines, and they are the movements that must be shown in each routine, they are the places where the essence of Wushu can be best reflected in competitive Wushu routines. It includes the practice of maneuvers, footwork, legwork and balancing, jumping, and other movements in the routines. Although each item in the Wushu routines has its different characteristics, the practice of the basic skills is similar, so to practice Wushu, you have to work hard on the basic skills. (Li, 2009)

3. Flexibility Training

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In the special physical quality training of Wushu, flexibility exercises account for a large proportion. Good flexibility can ensure that athletes complete a series of technical movements quickly, accurately, harmoniously, and coherently, showing a high level of sportsmanship, helping to avoid injuries, and ensuring and prolonging sports life. Flexibility is poor, it will make the amplitude of the technical movements of the movement limited, affecting the coordination of the movement of force, the movement of stiffness, strength is not smooth, and movement is not coordinated other ills but also causes the movement of technical errors, muscle ligament strain is one of the reasons. The quality of flexibility has a very close relationship with the age of training. 8-12 years old is the "sensitive period" for the development of the quality of flexibility, and seizing this time to train can get twice the result with half the effort. In the stage of basic training, Wushu should pay special attention to the overall development of flexibility. Flexibility exercises, according to their anatomical parts can be divided into legs, waist, shoulders, knees, hips, large joints and wrists, ankles, and small joints, in the promotion of large joints flexibility, flexibility development at the same time, but also pay attention to the development of small joints of the flexibility, so that the joints of the flexibility, the flexibility of the muscles to improve the exhibition of elasticity. When practicing, we should use a combination of motion and static, up and down, flexibility exercises, and speed and strength exercises. Through comprehensive flexibility exercises, the flexibility of athletes achieve the requirements of being flexible but not soft, and tough but not stiff, in line with the needs of the special techniques of Wushu. When doing flexibility exercises, we should do a good job of full preparatory activities, and when doing flexibility exercises with the help of external forces such as pressure, wrenching, tearing, etc., we should gradually increase the force and increase the amplitude of the action, and we should not exert ourselves violently and pull sharply, to avoid sports injuries. Moreover, in the research on Wushu's basic training in the development of physical quality of 5-6 years old children experimental, the basic training of Wushu can effectively improve the physical quality of 5-6 years old children (Wang, 2020).

4. Agility training

Sports require a certain number of skills such as hand-eye coordination, strong jumping ability, and quickness to cope with fatigue under pressure or change of direction. Athletes are adapting to rapid changes in the body resulting from neurological development, governed by changes in intramuscular and intermuscular coordination and improvements in general motor control. It is prudent to focus on the integration of technique and physical fitness, combining basic motor skills, strength training, rapid extension, and extension compound training, change of direction speed, and reactive agility training to enhance strength, power, speed, and other essential motor components. A starting point is building lower body strength, focusing primarily on hip, knee, and ankle stability, in addition to core support. (Feng, 2012). Developing basic motor skills during childhood is essential for long-term athletic development to test previously mastered correct movement patterns in competition situations. Age-appropriate rapid-stretch compound and strength training are effective in promoting growth in agility performance as they include rapid stretching of muscles such as centrifugal, isometric, centripetal, and dynamic strength. Having greater strength capacity allows for better execution of movements, and balance, and assists in "overcoming" immutable traits, which can have a positive impact on performance. Neuromuscular adaptations occur due to improved CNS signaling and proprioceptive feedback due to improved motor unit recruitment patterns. More emphasis can be placed on the development of change of direction speed. Basic movements can then be applied to rapidly accelerate, decelerate, and then re-accelerate in a controlled and pre-planned environment where the athlete's understanding and magnitude of the change in direction are noted. As progress is made, integrating reactive agility-specific training can drastically improve reactive strength and performance due to open-ended training and spontaneous changes in direction in response to stimuli. Incorporating a warm-up session before reactive agility training is critical because it reinforces proper mechanics and reduces the risk of fatigue during unanticipated strenuous tasks. Exposing athletes to reactive agility training reinforces previously learned movement patterns and develops sport-specific reactive agility techniques in a timeframe where the sensorimotor cortex is prone to rapid development. Introducing exercises that simultaneously develop decision-making and movement execution strengthens the link between stimuli and appropriate movement responses, leading to faster decision-making and movement execution in specific situations (Li, 2013).

Conceptual Framework

The conceptual framework for this research is as follows:

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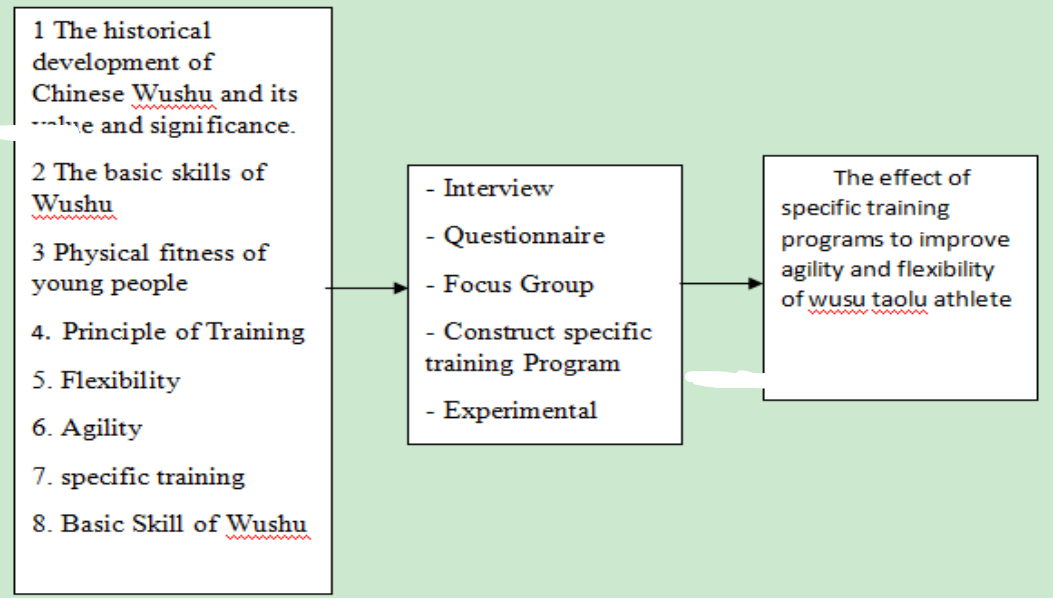

Figure 1: Conceptual framework

Methodology

1. Research Tools

1. Interview form; 2. Questionnaire (IOC value = 0.825); 3. Flexibility test; 4. Agility test; and 5. A specific Training program which develop by the researcher.

2. Population and Sample

Population: 60 Wushu Taolu athletes from Northwest Normal University (NWNU), all of whom had received professional Wushu training, were between the ages of 19-21 years old.

*Sample:*60 Wushu Taolu athletes were tested on agility and flexibility included in the sampling criteria. A final sample of 30 Wushu set athletes was drawn. To implement the sampling approach, we will test 60 Wushu Taolu athletes, rank their test scores in descending order, and select the bottom 40 scores. We will then invite these Wushu Taolu athletes to voluntarily participate in the experiment, aiming for a total of 30 participants.

3. Data Collection

1. Literature method: relevant literature was reviewed by consulting monographs, journal articles, newspapers, and magazines and searching for relevant literature by using websites such as China Knowledge and China Academic Journals.

2. Questionnaire survey method: questionnaires were administered to 30 subjects to collect data about the problem of agility and flexibility of Wushu Taolu athletes.

3. Experts' interview method: questionnaires were sent to 5 experts, including 3 coaches of Wushu teams and 2 national judges. Through the questionnaire survey of 5 experts.

4. Focus group method: using Focus Groups to develop and improve training programs. Focus group discussions were organized, with 15 experts.

5. Experimental method: the data from the pre-test, mid-test, and post-test of the 30 Wushu set athletes were collected by using an Excel sheet and the results of the experiment were analyzed by using the ANOVA.

4. Data Analysis

This study mainly used software packages to analyze the data.

1. One-way ANOVA was used to analyze the result of the pre-test, after 4 weeks of training test and post-test.

2. Evaluate the content validity of the questionnaire through the utilization of the program validity analysis method, employing the Indexes of Items of Objective Congruence (IOC).

3. Descriptive statistical techniques, such as computing the mean and standard deviation, are employed to analyze the data gathered from the questionnaires.

4. Content analysis was used to analyze the data from focus group experts.

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Results

1. The result of the questionnaire survey to study the problem of agility and flexibility of Wushu Taolu athletes.

Table 1: The results of the questionnaire survey of the students of the Wushu team of the Physical Education College of Northwest Normal University in Gansu Province, China

Questionnaire Items	Total Score		Result
	$\bar{x}$	S.D.	
How much do you like Wushu Taolu?	5.00	0.00	Strongly Agree
How important are Wushu skills in a Wushu Taolu?	4.90	0.40	Strongly Agree
Does the strength of the flexibility affect the Wushu Taolu?	4.90	0.30	Strongly Agree
Does the strength of agility affect Wushu Taolu?	4.77	0.50	Strongly Agree
Does improving flexibility reduce injury?	4.90	0.40	Strongly Agree
Does increased agility reduce injury?	4.67	0.65	Strongly Agree

After administering surveys to 30 Wushu Taolu athletes, the results revealed a strong affinity among these athletes for the sport. They expressed a deep appreciation for Wushu Taolu and overwhelmingly agreed that incorporating training focused on fundamental Wushu skills would significantly enhance their flexibility and agility and could reduce the risk of injuries in the sport and that improving flexibility and agility through the training of Wushu basic skills could lead to better performance in the competitions.

2. The result of constructing specific training programs to improve the agility and flexibility of Wushu Taolu athletes.

2.1 The process of constructing the training program

1. To develop the outline of the training program by interviewing the experts and collecting the opinions of all the experts.

2. Determine the training goal: first of all, it needs to be clear that the goal of training is to improve the flexibility and agility of Wushu athletes.

3. Formulate the training program: According to the training objectives, formulate the training program, which includes the time of each training, training content, training intensity, and training volume. Training is conducted 3 times a week, and the duration of each training session is about 120 minutes.

4. Arranging training content: including basic movement training and small combination training. It is necessary to choose the appropriate training content according to the athlete's ability and actual situation.

5. Arranging training intensity and training volume: It is necessary to control the training intensity and training volume appropriately in training to avoid excessive fatigue. Generally speaking, each movement or exercise needs to be performed in 2-4 groups, with 8-20 repetitions per group, and the interval between each exercise is 30 seconds to one minute.

6. Evaluation and Adjustment: During the training process, the training effect needs to be evaluated regularly and appropriate adjustments need to be made according to the evaluation results. For example, if it is found that flexibility is insufficient, the proportion of flexibility training can be increased appropriately; if it is found that agility is insufficient, the proportion of agility training can be increased appropriately.

2.2 Results of constructing a training program

1. Elements of Basic Wushu

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Wushu basic skills are the physical abilities, skills, and mental qualities necessary for martial arts training. It consists of various types of indispensable and typical movements and is an important element of specialized practice for various parts of the body, which can lay the foundation for learning complex movements later.

Table2: Classification and content of basic skills

Hand shape	Fist, Palm, Hook
Step pattern	Lunge, Horse stance, Servant stance, False stance, Rest stance
Legwork	Front kick, Side kick, Inside-out, Outside-out, Single tag, Leg flick, Stomp, Side kick, Front sweep, Back sweep
Bound	Flying Feet, Side Flips, Spinning Feet, Spinners, Outside Swinging Lotus
Equilibrium	Knee lift balance, leg snap balance, swallow balance, tanuki balance
Stumble and Fall	Forward reversal, Backward reversal, Measured reversal, Back snatch, and Carp

From Table 2, the researcher sent the above information to 9 experts for the study and the result was that 9 experts unanimously approved this training content, which can be used as the training content for this experiment.

2. Developing a training program

Table 3: Training Program

Training time	**Training purpose**	**Training content**
Phase I September 1-September 15, 2023	Mastering the essentials of basic kung fu movements	Training time: 120 minutes Warm-up: 10 minutes Basic training: 90 minutes Relaxation: 10 minutes Flexibility: 2 sets of 8-10 reps of each exercise, 30 seconds rest between sets. Shoulder exercises Leg exercises Waist exercises Straight Swing Legs Flexion Legs Steps Sleight of hand Agility: 5 sets of 2 repetitions of each exercise with 30 seconds rest between sets. Jumping Balance Small Combination Training
Phase 2 September 16 - September 30, 2023	Ability to improve flexibility and agility	Training time: 120 minutes Warm-up: 10 minutes Basic training: 90 minutes Relaxation: 10 minutes Flexibility:3 sets of 10-15 reps for each exercise, 30 seconds rest between sets. Shoulder exercises Leg exercises Waist exercises Straight Swing Legs Flexion Legs Steps Sleight of Hand Agility: 5 sets of 3 repetitions of each exercise with 30 seconds rest between sets.

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Training time	Training purpose	Training content
		Jumping Balance Small Combination Training
Phase 3 October 1- October 15, 2023	Refinement of various technical movements in basic skills	Training time: 120 minutes Warm-up: 10 minutes Basic training: 90 minutes Relaxation: 10 minutes Flexibility training: 3 sets of each exercise 10-25 reps per set, 1 minute rest between sets Shoulder exercises Leg exercises Waist exercises Straight Swinging Legs Flexing Legs Agility: 2 sets of 3 repetitions of each exercise, 30 seconds rest between sets.
Phase 4 October 16th - October 31st, 2023	Consolidate and improve the quality of completion of Wushu Taolu movements	Training time: 120 minutes Warm-up: 10 minutes Basic training: 90 minutes Relaxation: 10 minutes Flexibility training: 2 sets of each exercise 12-30 reps per set, 1 minute rest between sets Shoulder exercises Leg exercises Waist exercises Straight Swing Legs Flexion and Extension Legs Agility: 2 sets of 2 reps of each exercise, 30 seconds rest between sets Footwork Jumping Balance Small Combinations

The training is divided into four phases. The first phase, from September 1 to September 15, 2023, is the basic training phase of Wushu hand and step patterns. The second stage is from September 16 to September 30, 2023, which is the stage of improving the basic skills of Wushu, and further increasing the difficulty of the first stage of basic Wushu training. The third stage is from October 1 to October 15, 2023, to strengthen the basic skills training, increase the difficulty of the training, and perfect the various technical movements of the basic skills. The fourth stage is from October 16 to October 31, 2023, mainly to perfect the basic skills and technical movements of the basic skills mastered in the first three stages.

3. The result of comparing agility and flexibility of Wushu athletes before and after specific training programs.

1. It shows that the flexibility and agility of 19-21-year-old Wushu athletes can be effectively improved after the training of Wushu basic skills, and there is no significant difference in the results of agility and flexibility test of 19-21-year-old athletes before the training, and the training of Wushu basic skills has a positive effect on the performance of 19-21-year-old athletes' physical agility and flexibility, which is most significant for the improvement of the performance of the seated forward body flexion, reflecting that the training of Wushu basic skills has a positive effect on the development of the athletes' agility and flexibility ability.

Flexibility test: the subjects' lower back and lower extremities were tested before training during and after training using a seated forward bending tester, and data were collected and analyzed for data comparison.

Agility test: in the agility test need to have a stopwatch, marking bucket, and tape measure, subjects hear the instruction to move quickly in a t shape, test three times to record the best score, before training and after training to record the best score of the tester to compare and analyze the data.

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Table 4: ANOVA analysis results for seated forward bends

Clusters	sit-up-and-bend (physical exercise) cm	F Inspect		Multiple comparisons
		F	P	
preintervention	27.29±0.90	515.80	0.000	pre-test >
intervening	29.61±0.69			measurement >
post-intervention	33.03±0.90			post-test

From the results in Table 4, it was concluded that after the experimental intervention, there was a large difference between the anterior, intermediate, and posterior measures of seated forward bending, f=515.80, p<0.01.

Table 5: ANOVA analysis results for the T-word agility test

Clusters	T word agility s	F Inspect		Multiple comparisons
		F	P	
preintervention	24.87±0.90	405.759	0.000	pre-test >
intervening	22.63±1.15			measurement > post-test
post-intervention	20.17±1.01			

From the results in Table 5, it was concluded that after the experimental intervention, there was a large difference between the pre-test, mid-test, and post-test of the t-word agility test, f=405.75, p<0.01.

2. Summary of the Experimental

The results can be drawn from the experiment that through the training of the basic skills of Wushu, the flexibility and agility of Wushu Taolu athletes can be effectively improved, which prompts the athletes' sports level to be improved as well. In Wushu Taolu competitions, enhanced flexibility and agility contribute to improved athletic performance. The experiment revealed that, when it comes to enhancing flexibility, female athletes benefit more from Wushu basic training compared to their male counterparts. Conversely, in terms of improving agility, male athletes exhibit greater progress compared to their female counterparts. Therefore, it can be concluded that the experimental results are by the research already set the hypothesis.

Conclusion

This research result shows that the training of Wushu basic skills can effectively improve the flexibility and agility of 19-21-year-old Wushu athletes, there is no significant difference in the results of agility and flexibility test of 19-21-year-old athletes before training, and the training of Wushu basic skills has a positive effect on the agility and flexibility of 19-21-year-old athletes, which is most significant for the improvement of the performance of the seated forward body flexion, reflecting the positive effect on the development of agility and flexibility. The results reflect that Wushu basic training has a positive effect on the development of agility and flexibility of athletes.

The basic martial arts training program developed had a positive effect on the development of both agility and flexibility in 19-21-year-old athletes The issue of basic martial arts training as a means to help improve the physical fitness of athletes aged 19-21 years. It has a significant enhancement effect on the physical quality of athletes, with the most significant improvement in agility and flexibility.

Discussion

Before training, there is no noteworthy contrast in the outcomes of agility and flexibility tests for athletes aged 19-21. However, following training, the practice of Wushu basic skills proves to have a favorable impact on the agility and flexibility of athletes in this age group. This impact is particularly prominent in enhancing seated forward body flexion performance, underscoring a positive influence on the development of both agility and flexibility.

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The research result showed that after 8 weeks of specific training with 30 Wushu Taolu athletes, the Wushu basic skills training can effectively improve the flexibility and agility of the athletes. This is consistent with the research result of Wang (2020) "Wushu basic training on the development of physical quality of 5-6 years old children's experimental study", the basic training of Wushu can effectively improve the physical quality of 5-6 years old children.

The research findings reveal a significant enhancement in both flexibility and agility among Wushu Taolu athletes following an 8-week specialized training program. The study, conducted with a cohort of 30 Wushu Taolu athletes, underscores the effectiveness of Wushu basic skills training in cultivating these essential physical attributes. The improvements observed in flexibility and agility can be attributed to the specific nature of Wushu Taolu training, which involves a combination of dynamic movements, intricate routines, and precise techniques. These findings contribute valuable insights to the field of sports science, highlighting the targeted benefits of Wushu basic skills training for athletes seeking to enhance their physical capabilities.

This research aligns with existing literature emphasizing the importance of sport-specific training interventions for optimizing athletic performance (Smith et al., 2019). The positive outcomes reported in this study support the notion that tailored training programs, such as Wushu basic skills training, can yield tangible improvements in key physical attributes. Coaches, practitioners, and sports scientists can leverage these findings to design evidence-based training regimens aimed at enhancing flexibility and agility in Wushu Taolu athletes, ultimately fostering superior performance in competitive settings. As sports science continues to evolve, studies like this contribute to the cumulative knowledge base, informing best practices for training methodologies across various sports disciplines.

Recommendation

1. Basic Wushu training is the prerequisite and foundation for the improvement of Wushu skills and is an indispensable and important link in the development of traditional Wushu sports in China.
2. Functional training of body movement is an important training system theory in the field of competitive sports in the current world, and its scientific nature is beyond doubt.
3. Wushu basic skills training and body movement function training are closely related to each other in terms of training content, purpose, mode, and principle. Building upon this observation, intensifying research on the integration of Wushu basic training and functional body movement training proves beneficial for the scientific advancement of Wushu fundamentals. This approach facilitates overcoming bottlenecks in Wushu development and addresses the current status of Wushu lagging in its overall progression.
4. Strengthening the research on the integration of basic Wushu training and physical-motor function training is also an important measure to expand the service area of physical-motor function training.

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