Received: 23 May. 2025 | Revised: 03 Jun. 2025 | Accepted: 11 Jun. 2025 | Published online: 25 Jun. 2025

RESEARCH ARTICLE

Contemporary Education and Teaching Research
2025, Vol. 6 (6)242-252
DOI: 10.61360/BoniCETR252018360606

The Effect of Wushu Routine Training on Basic Movement Patterns in Children

Zhijie Zhang[1], Cong Lang[1], Yuxian Cao[1,2], & Cong Liu[2,*]
[1]*Tianjin Binhai Foreign Languages School, China*
[2]*College of Education for the Future, Beijing Normal University, China*

Abstract: This study aimed to evaluate the fundamental movement patterns of elementary school students using the Functional Movement Screen (FMS) and assess the effectiveness of the Wushu routine training program. A total of 164 fifth-grade students (83 in the experimental group and 81 in the control group) underwent an 8-week course teaching experiment. The experimental group participated in the Wushu routine training program, while the control group engaged in regular physical education training. Descriptive statistics, t-tests, and simple correlation analyses were utilized to analyze the data. Results demonstrated that both training programs significantly improved students' FMS scores and reduced the low score rate and asymmetry rate. However, the Wushu routine training showed a more pronounced effect on enhancing the FMS scores compared to conventional physical education training. It was concluded that the five-step fist routine training effectively enhances the functional movement screening scores and optimizes the basic movement patterns of students.

Keywords: five-step fist routine, basic movement pattern, functional movement screen, teaching experiment

1. Introduction

Basic (fundamental and functional) movement patterns are the foundation of the development of movement skills, while the important basis of human movement patterns includes stability and mobility (Brown, 2012). People develop a workout plan according to their own movement pattern's weakness. If the weak link of the movement pattern cannot be determined, even the best equipment and programs cannot improve fitness and health (Cook et al., 2014). Functional Movement Screening (FMSTM) is mainly used to evaluate basic movement patterns. By detecting imbalances, deficits and asymmetries in basic movement patterns, FMS can effectively detect insufficient motor function and predict physical injury and provide the basis for the implementation of preventive strategies (Cook et al., 2006).

Previous studies have shown that poor basic movement patterns (as measured by the FMSTM) are an identifiable risk factor for injury in different sports groups, including football (Kiesel et al., 2007), volleyball (Aka et al., 2019), basketball (Bond et al., 2019), jiu-jitsu (Del Vecchio et al., 2016), and wushu (Ghafouri et al., 2020). In addition, researchers have also explored scientific and efficient basic movement pattern improvement programs through interventional research (Bodden et al., 2015; Skotnicka et al., 2017; Pacheco et al., 2013). However, few studies have focused on the effects of sports themselves on basic movement patterns (Cowen, 2009; Gustafson et al., 2021). To our knowledge, no investigation has been conducted on Wushu's effect on basic movement patterns. Wushu (Chinese martial arts) is an important physical training method for Chinese children and teenagers, and is an important teaching component of physical education and health courses in Chinese schools. Meanwhile, there are many practitioners all over the world.

Corresponding Author: Cong Liu
College of Education for the Future, Beijing Normal University, China

We choose the Five-step Fist Routine as the representative of Wushu routines. The Five-step fist routine is the foundation of Wushu routine learning and is commonly practiced by beginners. Research has proven that regular Wushu routine training has a positive effect on students' muscle strength, joint flexibility, coordination, sense of direction and balance (Zeng et al., 2021). However, there is a lack of research on the effect of Wushu on the improvement of basic movement patterns. Existing studies mostly focus on the application of Wushu in competitive sports or adult fitness (Ghafouri et al., 2020), while this study concentrates on the impact of Wushu in school physical education settings on children's basic movement patterns. By conducting an 8-week teaching experiment and utilizing the Functional Movement Screen (FMS) assessment, we aim to provide a novel perspective and quantifiable approach to evaluating the effectiveness of Wushu education, enriching the theoretical framework of Wushu teaching and offering practical guidance for its application in school physical education curriculum.

2. Methods

2.1 Participants

A total of 164 students from 4 classes of 5th grade enrolled in a primary school in Binhai New Area, Tianjin, China. Two classes (N = 83; mean age = 11.4 years) were randomly selected as the intervention group, and two classes (N = 81; mean age = 11.5 years) were randomly selected as the control group. All participants were free of any musculoskeletal disorders and fully participated in the entire intervention study course. From the perspective of motor development theories, the period between ages 9 and 12 is a key stage for consolidating and enhancing FMS. Fifth-grade students, generally around 11 years old, are in this critical period. They have already been exposed to basic school physical education, which makes them more receptive to new sports such as Wushu. Considering younger students might lack sufficient coordination for accurate FMS testing and older students may have more rigid movement habits that could obscure the effects of Wushu intervention, fifth-grade students were chosen as the research participants.

Baseline characteristics were comprehensively assessed to determine group equivalency prior to the intervention. Data on physical activity levels were collected via self - reports, including weekly physical activity frequency, duration, and participation in extracurricular sports training. Furthermore, questionnaires surveyed students' prior exposure to Wushu or similar movement forms, such as previous Wushu learning experience or observation of Wushu performances or films. No significant differences were found between the groups at baseline.

2.2 Procedures

This study was an intervention study. The intervention program was 8 weeks in duration and included administration of the FMS test on the first class of the first week of the teaching experiment and on the last day of classes on the eighth week. The experimental and control group courses were taught by the same teacher to maintain consistency in instruction. During the assessment phase, all FMS tests were conducted by the same group of trained researchers. The testing environment was the school's indoor sports venue, which was kept quiet, clean, and at a suitable temperature. Testing equipment was uniformly placed and adjusted to ensure the objectivity and stability of the assessment process. The intervention group classes were taught the five-step fist routine courses, and the control group class were taught the regular physical education courses. The detailed content plan is shown in Table 1.

Table 1 Content Plan of Teaching Courses for the Intervention Group and Control Group

Content description	Intervention group	Control group
Course content	Basic skills: kicking, horse step, punching, pushing palm, and knee. Routine movement: 1. Starting form 2. Strike forward in bow stance 3. Kick and punch 4. Horse stance fighting 5. Step backward and press palm 6. Thrust Punch with Resting Stance 7. Raise knee and thread palm 8. Open palm with Half-squat stance 9. Stick up palm in empty stance 10. Closing form	Running, basketball, table tennis, football, games, and independent activities
Schedule	Week 1: FMS Test + movement teaching Week 2 to 4: movement teaching and training Week 5 to 7: movement training and presentation Week 8: Summary and presentation + FMS test	Week 1: FMS Test + rope skipping Week 2 to 3: Basketball Week 4 to 5: Table tennis Week 6 to 7: Football Week 8: Game activity + FMS test

2.3 Functional movement screen

A functional movement screen was developed according to the important movement patterns in the process of human development and can be used to observe the restricted movement of the subject, the asymmetry between the joints, and the movement compensation. This is used to judge the mobility and stability of the human joints and to identify defects and deficiencies in movement patterns to correct them through targeted training (Beardsley & Contreras, 2014). The FMSTM consists of 7 tests: deep squat, hurdle step, in-line lunge, shoulder mobility, active straight leg raise, trunk stability push-up, and rotation stability. Among the seven screening movements, the deep squat, hurdle step and in-line lunge are known as the “big three”. These tests show the daily core stability of the body in the three primary foot positions. The active straight leg raise, shoulder mobility, trunk stability push-up and rotation stability are regarded as the “little four” tests, which can be regarded as primitive functions. Moreover, active straight leg raise and shoulder mobility tests focus on mobility, while the other two tests focus on stability (Brown, 2012).

During the test, hurdle step, in-line lunge, shoulder mobility, active straight leg raise and rotation stability require testing on both the left and right sides, and shoulder mobility, trunk stability push-ups and rotation stability also require injury screening and testing for pain in the subject and are scored as negative if there is no pain. Each action corresponds to four scoring criteria: the subject can complete the action and earns 3 points; the subject can complete the action, but the action quality is not as high and earns 2 points; the subject cannot complete the action or maintain the starting action and earns 1 point; and pain is experienced during the test and the subject earns 0 points. When the left and right test scores are different, the lower value is taken as the final score result. In this study, the total score can range from 0 to 21. A score below 14 indicates a significantly increased risk of sports injuries (Kiesel

et al., 2007). Participants were classified into two groups: those with a score of ⩽14 were placed in the low-score group, while those with a score >14 were classified into the non-low-score group. However, even if a student has a score above 14 points, the likelihood of injury increases if there is a left-right asymmetry. Asymmetry is defined as a score difference of more than 1 point (on a full score of 3) for the same movement item performed on the left and right sides (Kiesel et al., 2008).

2.4 Statistical analysis

Data were analyzed using SPSS 26.0 statistical software. The statistical significance level was set at 0.05. Descriptive statistics were conducted to describe FMS total scores and subitem scores, low score rates and asymmetry rates before and after the experiment. Paired-samples t tests were used to test the pre- and post-FMS scores of the two groups to determine whether the FMS scores of the two groups of students improved after the course training. Independent-samples t tests were used to test whether there were significant differences in pre- and post-FMS scores between the two groups. Simple correlation analysis was used to test the correlation between the students' FMS scores before and after the experimental course.

3. Results

Table 2 shows that the pretest total scores of the intervention group and control group were above 14 points, and there were no significant differences between the total scores of the intervention and control groups (p=0.165). After the teaching experiment, the average score of the overall FMS in both the intervention and control groups was higher than 16 points. The independent sample t test showed that the total FMS score of the intervention group was significantly better than that of the control group (p=0.000). The screening results of deep squat, in-line lunge and rotation stability in the intervention group were significantly higher than those in the control group (p=0.000). There was no significant difference in shoulder mobility, stability push-ups or active straight leg raise. However, the average score of the subitems in the intervention group was higher than that in the control group.

Paired sample t tests showed that the total FMS scores of the intervention group and the control group were significantly improved after the course experiment, and the scores of the intervention group were significantly improved in the five subitems of deep squat, hurdle step, in-line lunge, trunk stability push-up and rotation stability. The control group had significantly improved scores in four subitems: in-line lunge, hurdle step, active straight leg raise and rotation stability. In addition, the improvement effect of the intervention group and the control group on shoulder mobility was not significant.

Table 2 Comparative Analysis of the Functional Tests Before and After the Teaching Experiments Between the Intervention Group and the Control Group

	Group	Pre-test		Post-test			
		Average score	P-value (individual sample t-test)	Average score	P-value (individual sample t-test)	Rate increase	P-value (paired sample t-test)
Deep squat	Intervention	2.12±0.69	0.045	2.64±0.48	0.000	24.5%	0.000
	Control	1.90±0.70		2.02±0.77		6.3%	0.260
Hurdle step	Intervention	1.96±0.59	0.664	2.72±0.45	0.077	38.8%	0.000
	Control	1.93±0.52		2.58±0.57		33.7%	0.000
In-line lunge	Intervention	2.49±0.53	0.001	2.93±0.26	0.000	17.7%	0.000
	Control	2.21±0.54		2.57±0.50		16.2%	0.000
Shoulder mobility	Intervention	2.48±0.69	0.815	2.51±0.63	0.064	1.2%	0.754
	Control	2.46±0.70		2.30±0.80		-6.5%	0.063
Active straight leg raise	Intervention	2.39±0.51	0.103	2.47±0.57	0.899	3.3%	0.179
	Control	2.23±0.66		2.48±0.59		11.2%	0.000
trunk stability push-up	Intervention	1.80±0.56	0.001	2.31±0.54	0.295	28.3%	0.000
	Control	2.09±0.60		2.22±0.57		6.2%	0.117
Rotation stability	Intervention	1.92±0.63	0.512	2.30±0.46	0.007	19.8%	0.000
	Control	1.85±0.62		2.10±0.49		13.5%	0.005
Total score	Intervention	15.16±2.26	0.165	17.88±1.61	0.000	17.9%	0.000
	Control	14.67±2.25		16.27±2.11		10.9%	0.000

Table 3 shows the low score rate (⩽14) of the total FMS scores of the intervention group and the control group before and after the course experiment. Descriptive statistics show that the low score rate of the total FMS scores of the intervention group and the control group was 42.2% and 44.4% before the experiment, respectively, which are very close, while after the course experiment, the low score rate of both the intervention group and the control group decreased, and the low score rate of the intervention group (3.61%) was to a large extent lower than that of the control group (19.75%).

Table 3 Low Score Rate Before and After the Teaching Experiments Between the Intervention Group and the Control Group

	Group	Number of people	Low score rate before the experiment (numbers of participants)	Low score rate before the experiment (numbers of participants)
Total score	Intervention	83	42.2%(35)	3.61%(3)
	Control	81	44.4%(36)	19.75%(16)

The asymmetry rate of the intervention group and the control group after the course experiment was decreased in the three items (step crossing, front and back leg squatting and rotation stability).

However, the asymmetry in shoulder mobility and active straight leg lifting increased, as shown in Table 4.

Table 4 Asymmetry Rates Before and After Teaching Experiments in the Intervention and Control Groups

	Group	**Numbers of participants**	**Pre-experiment asymmetry rate** (numbers of participants)	**Post-experiment asymmetry rate** (numbers of participants)
Hurdle step	Intervention	83	24.1%(20)	9.6%(8)
	Control	81	27.2%(22)	6.2%(5)
In-line lunge	Intervention	83	24.1%(20)	6.0%(5)
	Control	81	38.3%(31)	23.5%(19)
Shoulder mobility	Intervention	83	33.7%(28)	39.8%(33)
	Control	81	30.9%(25)	32.1%(26)
Active straight leg raise	Intervention	83	15.7%(13)	36.1%(30)
	Control	81	25.9%(21)	32.1%(26)
Rotation stability	intervention	83	26.5%(22)	12.0%(10)
	Control	81	39.5%(32)	21.0%(17)

Comparing the lower score ($\leqslant 14$) and higher score (>14) groups' asymmetry rates of all participants, Table 5 shows that in the pretest, the low score group had a higher asymmetry rate in five two-sided tests compared with the higher score group. After the experiment, the asymmetry of the high group decreased significantly in the hurdle step, in-line lunge and rotation stability. The asymmetry of the shoulder mobility and active straight leg raise increased in both the high and low groups. It is worth noting that the asymmetry of the low groups increased in hurdle events.

Table 5 Asymmetric Rates Before and After Teaching Experiments in the Low and Nonlow-Score Groups

	Pretest score	**Number of participants**	**Pre-experiment asymmetry rate** (numbers of participants)	**Post-test score**	**Number of participants**	**Post-experiment asymmetry rate** (numbers of participants)
Hurdle step	≤14	71	28.2%(20)	≤14	19	36.8%(7)
	>14	93	23.7%(22)	>14	145	4.1%(6)
In-line lunge	≤14	71	42.3%(30)	≤14	19	42.1%(8)
	>14	93	22.6%(21)	>14	145	11%(16)
Shoulder mobility	≤14	71	53.5%(38)	≤14	19	63.2%(12)
	>14	93	16.1%(15)	>14	145	32.4%(47)
Active straight leg raise	≤14	71	25.4%(18)	≤14	19	63.2%(12)
	>14	93	17.2%(16)	>14	145	30.3%(44)
Rotation stability	≤14	71	39.4%(28)	≤14	19	15.8%(3)
	>14	93	28%(26)	>14	145	16.6%(24)

Table 6 presents the simple correlation analysis of functional movement screening scores before and after the teaching experiments. Hurdle step was significantly associated with active straight leg raise, and in-line lunge was significantly associated with trunk stability push-up and shoulder mobility, both in the pretest and posttest. Except for deep squat and rotation stability, the scores of other items and total scores in the pretest (T0) and posttest (T1) were significantly correlated. Moreover, except for deep squat and rotation stability, the scores of other items and total scores in the pretest (T0) and posttest (T1) were significantly correlated. In addition, different pretest sub items have significant predictability for posttest items. Deep squat T0 has a significant predictive effect on hurdle step T1 and trunk stability push-up T1. Hurdle step T0 has a significant predictive effect on shoulder mobility T1 and active straight leg raise T1. In-line lunge T0 has a significant predictive effect on hurdle step T1, active straight leg raise T1, trunk stability push-up T1 and rotation stability T1. Shoulder mobility T0 has a significant predictive effect on hurdle step T1, active straight leg raise T1 and rotation stability T1. Active straight knee lift T0 has a significant predictive effect on hurdle step T1, and rotation stability T0 has a significant predictive effect on in-line lunge T1.

Table 6 Correlation Analysis of Functional Action Screening Scores Before and After the Teaching Experiments

	DS T0	DS T1	HS T0	HS T1	IL T0	IL T1	SM T0	SM T1	ASLR T0	ASLR T1	TSPU T0	TSPU T1	RS T0	RS T1	TS T0	TS T1
DS T0	1															
DS T1	.12	1														
HS T0	.14	-.07	1													
HS T1	.18*	.10	.27**	1												
IL T0	.25**	-.01	.26**	.28**	1											
IL T1	.07	.11	.03	.14	.18*	1										
SM T0	.24**	-.08	.24**	.24**	.24**	.13	1									
SM T1	.14	.06	.16*	.17	.15	.33**	.46**	1								
ASLR T0	.15	.08	.20*	.20**	.16*	.07	.26**	.13	1							
ASLR T1	-.029	.05	.16*	.17*	.21**	.10	.22**	.10	.50**	1						
TSPU T0	.15	.01	.08	.05	.16*	.05	.06	.10	-.06	-.10	1					
TSPU T1	.17*	.02	.09	.17*	.22**	.16*	.10	.09	-.01	.04	.21**	1				
RS T0	.14	.06	.26**	.12	.15	.21**	.08	.08	.08	.09	.05	.09	1			
RS T1	.18	-.04	.15	.06	.17*	.07	.23**	.11	.12	.14	-.08	.06	.15	1		
TS T0	.59**	.04	.57**	.35**	.58**	.20**	.61**	.34**	.48**	.28**	.38**	.23**	.48**	.24**	1	
TS T1	.23**	.43*	.23**	.51**	.33**	.51**	.40**	.60**	.33**	.48**	.08	.44**	.22**	.37**	.50**	1

Notes:

DS: Deep squat; HS: Hurdle step; IL: In-line lunge; SM: Shoulder Mobility; ASLR: Active straight leg rise; TSPU: Trunk stability push-up; RS: Rotation stability; TS: Total score.

T0 are pre-test data and T1 are post-test data.

. Association was significant at the 0.05 level (bilateral).. Association was significant at the .01 level (bilateral).*

4. Discussion

This study is the first to explore the influence of five-step fist routine training on students' basic movement patterns. The data from the study show that, compared to the regular physical education course, the five-step fist routine training has a

significant promotion effect on the overall improvement of the basic movement patterns. This should be related to the characteristics of movement of the five-step fist routine. From the external structure of the action, there are similarities between the five-step fist routine movement and the basic movement patterns. The horse stance is very similar to a deep squat, both requiring hip flexion and a straight back. The raise knee and thread palm exercises are very close to the hurdle step, and both require the subject to raise the knees and maintain stability. At the same time, the resting stance and active straight leg rise and the kicking and active straight leg rise are also very similar in movement form and functional requirements. In addition, the strike forward in bow stance, half-squat stance and other movements may also indirectly improve movement patterns such as push-ups and rotation stability.

Regarding the influence of the five-step routine course training on stability and mobility, we found that the five-step boxing course training group showed a significant and positive correlation in the assessment of stability-related movements (deep squat, hurdle step, in-line lunge, trunk stability push-up, and rotation stability) but no significant correlations in the movement assessment of flexibility (shoulder mobility and active straight leg raise). This may be because mobility and stability problems coexist. Intense exercise focus on one region causes unintentional neglect in another (Brown, 2012). During mobility concessions, increased muscle tension provides the necessary guarantee for the functional development of stability. A short-term five-step fist routine training regimen encourages students to complete a high-quality five-step fist routine as the main goal. For ordinary students not familiar with practicing martial arts routines, the standard and stability of a single movement completion are naturally placed in the first place, which may also be an important factor affecting the development of students' mobility. From this point of view, if students want to continue to develop movement patterns, mobility should serve as an important training content.

The analysis of the change in the asymmetry rate experiment found that both groups have some reduction in the asymmetry rate of the hurdle step, in-line lunge and rotation stability exercises. However, for shoulder mobility and active straight leg raise exercises, asymmetry improved in both high and low groups. This may be due to the fact that most sports have a dominant unilateral body phenomenon (Graham-Smith et al., 2011). In the five-step fist routine subjects also only need to complete the unilateral action. This increase in unilateral stability requirements provides greater opportunities for the differential development of left- and right-sided mobility. Given the potential negative impact of asymmetry on injury risk and physical performance, several steps should be taken to reduce these differences. Bishop et al. (2018) showed that both bilateral and unilateral strength enhancement training, as well as balance and core training, can successfully reduce the left-right differential (Bishop et al., 2018), which can be used as corrective training.

The results of the correlation analysis of different movements showed that hurdle step was significantly associated with active straight leg raise, and in-line lunge was significantly associated with trunk stability push-up and shoulder mobility, both in pretest and post-test measurements. This may be because the movement patterns of the test items are similar; both hurdle step and active straight leg raise require a coordinated active contraction of the front thigh and the flexibility of the posterior muscles, while in-line lunge and trunk stability push-ups and shoulder mobility are associated with trunk stability and mobility. In addition, there are also some direct or indirect associations between the other programs. However, none of the individual items were significantly associated with all items. This shows that in the development of movement ability, we should pay attention to the overall improvement of different basic movement patterns.

Finally, this study still has some limitations. First, the results of the five-step fist routine were not scored in the experiment for each student, so the

correlation analysis between the five-step fist routine score and functional action screening was not analyzed. Future studies can study the correlation between the five-step fist routine score and functional movement screen score. Second, in the selection of research subjects, different age groups may also have differences in the development of movement patterns and the learning results of Wushu routine. Therefore, research from a wider group is needed to support the promotion value of the Wushu routine for the development of children's basic movement patterns in the future.

Conclusion

Wushu routine training has a positive role in promoting the development of children's basic movement patterns. Compared with the regular physical education course, the five-step fist routine training more significantly reduces the low score rate and asymmetry rate of students' functional movement screening. However, the five-step fist routine training makes concessions to stability in promoting mobility. It is suggested that in the process of five-step fist routine learning, mobility and asymmetry correction training should be added, and attention should be given to the coordinated development of physical stability and mobility to lay a solid foundation for more complex Wushu movement skills and other sports learning.

Conflict of interest

The authors declare that they have no conflicts of interest in this work.

Acknowledgment

This research was funded by:

Introduction of Talent and Research Start-up Fund of Beijing Normal University Zhuhai Campus, Grant Number: 29100 - 312200502543.

References

Aka, H., Yilmaz, G., Aktug, Z. B., Akarçesme, C., & Altundag, E. (2019). The Comparison of the Functional Movement Screen Test Results of Volleyball National Team Players in Different Countries. *Journal of Education and Learning, 8*(1), 138-142.

Beardsley, & Contreras, B. (2014). The Functional Movement Screen: A Review. *Strength and Conditioning Journal, 36*(5), 72–80.

Bishop, C., Turner, A. & Read, P. (2018). Training Methods and Considerations for Practitioners to Reduce Interlimb Asymmetries. *Strength and Conditioning Journal, 40* (2), 40-46.

Bodden, Needham, R. A., & Chockalingam, N. (2015). The Effect of an Intervention Program on Functional Movement Screen Test Scores in Mixed Martial Arts Athletes. *Journal of Strength and Conditioning Research, 29*(1), 219-225.

Bond, Dorman, J. C., Odney, T. O., Roggenbuck, S. J., Young, S. W., & Munce, T. A. (2019). Evaluation of the Functional Movement Screen and a Novel Basketball Mobility Test as an Injury Prediction Tool for Collegiate Basketball Players. *Journal of Strength and Conditioning Research, 33*(6), 1589–1600.

Brown, P. (2012). Movement: Functional movement systems–screening, assessing, corrective strategies on target publications. *The Journal of the Canadian Chiropractic Association, 56*(4), 316.

Cook, Burton, L., & Hoogenboom, B. (2006). Pre-participation screening: the use of fundamental movements as an assessment of function - part 1. *North American Journal of Sports Physical Therapy, 1*(2), 62–72.

Cook, Burton, L., Hoogenboom, B. J., & Voight, M. (2014). Functional movement screening: the use of fundamental movements as an assessment of function - part 1. *International Journal of Sports Physical Therapy, 9*(3), 396–409.

Cowen. (2009). Functional fitness improvements after a worksite-based yoga initiative. *Journal of Bodywork and Movement Therapies, 14*(1), 50–54.

Del Vecchio, Gondim, D. F., & Arruda, A. C. P. (2016). Functional Movement Screening Performance of Brazilian Jiu-Jitsu Athletes From Brazil: Differences Considering Practice Time and Combat Style. *Journal of Strength and Conditioning Research, 30*(8), 2341–2347.

Ghafouri, A., Mohammadi, F., & Ganji, B. (2020). Relationship Between Selected Performance Tests and Non-contact Sports Injuries in Male Wushu Players. *Physical Treatments-Specific Physical Therapy Journal, 10*(4), 239-249.

Graham-Smith, P., Comfort, P., Jones, P., & Matthews, M. (2011). Movement specificity-What does it mean. *Prof Strength Cond, 24*, 10-12.

Gustafson, A. M., Darby, L. A., & Berger, B. G. (2021). Functional Movement Testing of Female Track and Field Athletes: Before and After an Indoor Season. *Journal of Exercise Physiology Online, 24*(1).

Kiesel, K., Plisky, P., & Kersey, P. (2008). Functional Movement Test Score as a Predictor of Time-loss during a Professional Football Team's Pre-season: 1525: Board# 72: May 28 3: 30 PM-5: 00 PM. *Medicine & Science in Sports & Exercise, 40*(5), S234.

Kiesel, Plisky, P. J., & Voight, M. L. (2007). Can Serious Injury in Professional Football be Predicted by a Preseason Functional Movement Screen? *North American Journal of Sports Physical Therapy, 2*(3), 147–158.

Pacheco, Teixeira, L. A. C., Franchini, E., & Takito, M. Y. (2013). Functional vs. Strength training in adults: specific needs define the best intervention. *International Journal of Sports Physical Therapy, 8*(1), 34–43.

Skotnicka, M., Karpowicz, K., Bartkowiak, S., & Strzelczyk, R. (2017). The impact of the corrective and stability exercises program on the quality of basic movement patterns among dance students.

Zeng, D., Wu, Y., Zheng, C., Liang, Z. (2021). Effect of 12-week simplified five-step boxing exercise on balance ability of 11~13-year-old students with moderate intellectual disabilities. *Journal of Shandong Sport University, 37*(6):34-41.

How to Cite: Zhang, Z., Lang, C., Cao,Y., & Liu, C. (2025). The Effect of Wushu Routine Training on Basic Movement Patterns in Children. *Contemporary Education and Teaching Research*, *06*(6), 242-252. https://doi.org/10.61360/BoniCETR252018360606