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What Effect does FIFA11+ for kids have on the fundamental motor skills of elementary school soccer players?

Kazumasa Nakagawa*[1], Yuta Suto[2], Ryuta Saito[3], Kazuki Iwasaki[4], Kazuki Kubo[5]

[1]Department of Physical Therapy, Faculty of Health and Medical Care, Takasaki University of Health and Welfare, Japan

[2]Maebashi Red Cross Hospital, Gunma, Japan

[3]Department of Rehabilitation, JCHO Gunma Chuo Hospital, Gunma, Japan

[4]Gunma Sports Orthopedic Clinic, Gunma, Japan

[5]Kuroya Orthopedic Clinic, Saitama, Japan

*Corresponding Author: nakagawa-ka@takasaki-u.ac.jp

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Abstract

The FIFA 11+ is an established injury prevention warm-up program for players aged 14 years and older, and the FIFA 11+ for Kids (FIFA 11+K) was later developed to support younger players with playful exercises targeting balance, coordination, and strength. While its injury-preventive and performance benefits have been reported, little is known about its effects on fundamental motor skills, which have been declining among Japanese children. This study examined the effects of FIFA 11+K on fundamental motor skills in elementary school boys belonging to a local soccer club. Sixty-six children (8.2 ± 1.5 years) performed FIFA 11+K twice weekly for three months as a warm-up (intervention group), while 28 children (7.2 ± 1.6 years) continued their usual warm-up (control group). Performance in the 50-m sprint, standing long jump, and ball throw, as well as movement quality (5-point observational scale), were assessed before and after the intervention. The intervention group showed significant improvement in standing long jump form, while the control group improved only in jump distance. No significant improvements in running or throwing performance were observed in the intervention group; however, their form scores tended to improve compared with the control group. FIFA 11+K may help enhance movement quality, particularly in jumping tasks, in elementary school boys. These findings suggest its potential as a practical program not only for injury prevention but also for supporting the development of fundamental motor skills in children.

Keywords: football; movement quality; physical fitness test; warm-up; youth soccer

1. Introduction

According to a long-term study supported by the Japan Football Association (JFA) that investigated acute injuries during official matches between 1993 and 2007, an average of 21.77 incidents per 1,000 player-hours was reported (Aoki et al, 2012). This finding indicates that injuries and disorders—predominantly affecting the lower limbs—occur with high frequency in soccer. Similarly, among Japanese junior players (elementary school age), the reported incidence rate of injuries is 6.43 per 1,000

actual hours (AH) during matches and 1.49 per 1,000 hours during practice. Lower limb injuries are particularly common, with a high proportion of match-related cases attributed to physical contact (Kuzuhara et al, 2017). When an injury or impairment occurs, on-site physiotherapists or athletic trainers—if available—or other team staff members provide initial first aid and arrange for appropriate medical treatment. However, fostering a shared awareness among players, coaches, and medical staff regarding injury prevention, early detection, and appropriate response is of even greater importance.

In 2006, the FIFA Medical Assessment and Research Center (F-MARC) developed the *FIFA 11+*, an injury prevention program specifically designed for soccer. The FIFA 11+ is a warm-up program (hereafter, W-up) targeting players aged 14 years and older, aimed at preventing lower-limb injuries (Bizzini et al., 2013). A key feature of the program is that it can be completed in approximately 20 minutes without the use of any special equipment. Based on scientific evidence, the program consists of three parts and 15 exercises, including running, strength, plyometrics, and balance training, with a focus on teaching proper movement patterns and enhancing body control, particularly during landing, deceleration, and change-of-direction tasks (Bizzini & Dvorak, 2015). The FIFA 11+ has been widely disseminated worldwide, and its effectiveness has been demonstrated with high levels of evidence across multiple studies. For instance, Soligard et al. (2008) reported in a cluster-randomized controlled trial involving Norwegian youth female players that implementation of the FIFA 11+ reduced the overall injury incidence by 37% and the incidence of severe injuries by 47%. Similarly, Silvers-Granelli et al. (2015) demonstrated a significant reduction in anterior cruciate ligament (ACL) injury incidence among U.S. collegiate male players, supporting the ACL preventive effects of the FIFA 11+. A meta-analysis integrating these findings showed that the FIFA 11+ reduced injury incidence by an average of 39%, confirming its strong preventive effect regardless of age or sex (Al Attar et al., 2016). Accordingly, the FIFA 11+ is considered a standard program that should be implemented for soccer players of all competitive levels to prevent injuries. In Japan as well, the FIFA 11+ has been widely adopted across universities and clubs, with its effectiveness continuously evaluated (Magoshi et al., 2023).

While the FIFA 11+ primarily targets players aged 14 years and older, the *FIFA 11+ for Kids* (hereafter, FIFA 11+K) was developed in 2016 for younger players. This program consists of playful exercises (e.g., balance, agility, strength, coordination) that can be completed in approximately 20 minutes, making it easily adaptable to warm-ups (Rössler et al., 2016). Its effectiveness has been demonstrated in various contexts. A systematic review involving more than 10,000 young participants (aged 7–14 years) across eight countries reported that the use of FIFA 11+K in soccer reduced overall injury risk by 48% and severe injury risk by 74%, while also positively affecting team and player performance and supporting the long-term development of young athletes (Ramos et al., 2024). Notably, Tseng et al. (2021) demonstrated that an 8-week FIFA 11+K program improved not only flexibility and core strength but also sustained and selective attention in Japanese elementary school children, highlighting potential benefits beyond injury prevention. In addition, Yang et al. (2022), after screening 230 studies, concluded that compared to regular warm-up routines, FIFA 11+K is an effective approach for reducing injury risk in youth soccer players. Collectively, these findings support the integration of

FIFA 11+K into regular training and physical education programs to promote both physical and cognitive development in children.

In recent years, however, a decline in fundamental motor skills among Japanese children has been reported in several studies. According to the "Physical Fitness and Exercise Capacity Survey" conducted by the Japan Sports Agency, performance in basic motor tests such as softball throwing, 50-m sprinting, and standing long jump has shown a general downward trend since peaking around 1985 (Japan Sports Agency, 2023). A developmental study of 11-year-olds further revealed historical declines in major physical fitness indicators, including grip strength, 50-m sprint, long-distance running, and softball throwing, and suggested a potential link with changes in school curricula (Yogi & Kokudo, 2015). Fundamental movements such as throwing, jumping, and running form the basis for acquiring essential motor skills during the developmental years, and declines in these abilities may negatively affect lifelong physical fitness and the establishment of healthy behaviors. Enhancing fundamental motor skills through improvements in school physical education, community sports, and opportunities for active play at home is thus considered important.

As outlined above, the effectiveness of the FIFA 11+ has been extensively documented in soccer players, and evidence for the FIFA 11+K in children has gradually accumulated. Although originally designed as an injury prevention program, one of its goals is to improve movement competency, which may also contribute to enhancing fundamental motor skills in children. However, while many studies have focused on performance outcomes or injury reduction, very few have specifically examined how the FIFA 11+K influences the development of fundamental movements in children. Clarifying these effects would broaden the applicability of the FIFA 11+K, not only in soccer but also as a program for addressing the decline in motor skills among children more generally. Therefore, the purpose of this study was to examine the effects of implementing the FIFA 11+K as a warm-up on fundamental motor skills in elementary school boys belonging to a local soccer club. The FIFA 11+K program is an exercise-based intervention designed to prevent injuries and impairments by emphasizing movement development and the enhancement of balance function. So we expected it should be beneficial for improving children's fundamental movement skills.

2. Research Methods

This study was an interventional study. The subjects were divided into a control group and an intervention group (implementation of FIFA11+K). Pre- and post-intervention comparisons of each parameter were conducted within each group, and between-group comparisons were performed both before and after the intervention.

2.1.Participants

Elementary school children (aged 6–13 years) belonging to a local soccer club were included. Based on the results of a regularly administered Physical Check Test (PC), changes in performance were compared and analyzed. The PC was conducted periodically at intervals of approximately three months.

Among the participants, 66 children (8.2 ± 1.5 years) who performed the "FIFA 11+ for Kids" (FIFA11+K) program as part of their warm-up between two PCs were assigned to the intervention group, while 28 children (7.2 ± 1.6 years) who did not perform the program served as the control group. The football club in which the participants were enrolled operated on a day-specific schedule, meaning that not all participants were active on the same day. Accordingly, grouping was performed based on the participants' assigned training days, resulting in a control group and an intervention group.

A power analysis was conducted using G*Power version 3.1.9.7 to assess whether the sample size was sufficient for comparisons between two dependent groups. The analysis was performed with an effect size of $d = 0.50$ and a β/α ratio of 1, assuming sample sizes of Group 1 (n = 66) and Group 2 (n = 28). The resulting statistical power (1 – β error probability) was 0.805, indicating that the number of participants in this study was sufficient. In addition, when the same parameters were applied to within-group pre- and post-intervention comparisons, the calculated power values were 0.964 for Group 1 (n = 66) and 0.856 for Group 2 (n = 28), suggesting that adequate statistical power was achieved in both groups. (*Effect size d*: standardized mean difference; α: significance level; $1 - \beta$: statistical power.).

2.2.Measurements

According to the New Physical Fitness Test by the Ministry of Education, Culture, Sports, Science and Technology in Japan (MEXT), three items were assessed: a 50 m sprint, a standing long jump, and a ball throw. The time or distance of each test was measured. Each test was performed twice, and the better result was adopted.

In addition, participants' movements during the tests were video-recorded. Based on these recordings, movement quality was evaluated using the observational criteria described in the m annual of the *Sports Boys and Girls Athletic Aptitude Test II* (MEXT). Each movement was rated on a five-point scale (1–5). Movement scoring was performed jointly by two experienced physical therapists using the video recordings. In cases of disagreement, a third physical therapist participated in the scoring process.

2.2.1.50 m Sprint

The time required to run from the starting line to the finish line 50 m away after the start signal. The grading criteria for the movement evaluation are as follows (Figure 1 for details): 1 = no arm swing, 2 = arm swing with imbalance or scraping motion, 3 = sufficient leg kick, 4 = large arm swing, 5 = adequate knee extension and horizontal kicking.

Characteristics of Motion		Illustration	Score
Pattern 1	**No arm swing** - No arm swing observed.		1

Characteristics of Motion		Illustration	Score
Pattern 2	**Arm swing with imbalance or scraping motion** - Arm movements resemble forward scratching, or the left and right arm swings are unbalanced.		2
Pattern 3	**Sufficient leg kick** - Adequate leg push-off is present.		3
Pattern 4	**Large arm swing** - Large arm swing movements are observed on both sides.		4
Pattern 5	**Adequate knee extension and horizontal kicking** - Knees are fully extended and kicked horizontally forward.		5

Figure 1. Running Score (From Ministry of Education, Culture, Sports, Science and Technology: MEXT) *translated into English and partially adapted)

2.2.2.Standing long jump

The distance from the take-off line to the rearmost heel position upon landing, measured with a tape measure. The grading criteria for the movement evaluation are as follows (Figure 2 for details): 1 = little or no arm motion or arms swung backward, 2 = arms raised laterally with shoulder tension, 3 = arms swung slightly forward with elbow flexion, 4 = arms swung forward with near full elbow extension, 5 = large forward-upward arm swing from a backswing.

Characteristics of Motion		Illustration	Score
Pattern 1	**Little or no arm motion or arms swung backward** - Both arms are barely moving or swinging backward in the opposite direction of the jump.		1
Pattern 2	**Arms raised laterally with shoulder tension** - Raise both arms sideways, tensing your shoulders and shrugging them up.		2
Pattern 3	**Arms swung slightly forward with elbow flexion** - Swing both arms slightly forward to the extent that your elbows bend.		3
Pattern 4	**Arms swung forward with near full elbow extension** - With elbows nearly fully extended, swing both arms forward.		4

Characteristics of Motion		Illustration	Score
Pattern 5	**Large forward-upward arm swing from a backswing** - From the backswing, swing both arms forward and upward in a wide arc.		5

Figure 2. Jumping Score (From Ministry of Education, Culture, Sports, Science and Technology: MEXT)
*translated into English and partially adapted)

2.2.3. Ball Throw

A standard No.1 softball (circumference 26.2–27.2 cm, weight 136–146 g) was thrown as far as possible, and the distance to the first point of contact with the ground was measured. The grading criteria for the movement evaluation are as follows (Figure 3 for details): 1 = trunk facing the throwing direction with no weight shift or change in support base, 2 = no step, but trunk rotation opposite to the throwing arm, 3 = step forward with the ipsilateral leg to change support base, 4 = step forward with the contralateral leg, 5 = pattern 4 with an additional wind-up motion.

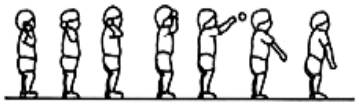
Characteristics of Motion		Illustration	Score
Pattern 1	**Trunk facing the throwing direction with no weight shift or change in support base** - The upper body remains facing directly toward the direction, with no change in the support surface or shift in body weight.		1
Pattern 2	**No step, but trunk rotation opposite to the throwing arm** - Both feet remain stationary, and the support surface does not change, but the throw is executed by twisting to the opposite side.		2
Pattern 3	**Step forward with the ipsilateral leg to change support base** - The forward step of the foot on the same side as the throwing arm changes the support surface.		3
Pattern 4	**Step forward with the contralateral leg** - The stepping motion of the opposite foot accompanies the throwing arm.		4
Pattern 5	**Pattern 4 with an additional wind-up motion** - In addition to the behavior pattern of Pattern 4, a wind-up motion is observed.		5

Figure 3. Throwing Score (From Ministry of Education, Culture, Sports, Science and Technology: MEXT)
*translated into English and partially adapted)

2.3.Intervention

The intervention group performed the FIFA 11+ K program twice per week as a warm-up (approximately 15 minutes per session). The control group continued their usual warm-up, consisting of jogging, stretching, and light calisthenics, for the same duration.

The FIFA 11+ K consists of seven exercises (Figure 4): (1) Jog & Look at the Coach (to stop), (2) Skating Hop, (3) One-Leg Stance, (4) Push-Up, (5) One-Leg Hops, (6) Spiderman, and (7) Roll Over. Each exercise is divided into five progressive levels. All participants began at Level 1 for each exercise, and progression was made gradually. Movements during each intervention session were video-recorded, and exercise levels were adjusted based on the consensus of the supervising staff.

2.4.Statistical Analysis

To examine differences between groups, both intergroup comparisons before and after the intervention and intragroup comparisons within each group were conducted. For intergroup comparisons of each measurement item before and after the intervention, an independent t-test was used when normality was confirmed; if normality was not confirmed in either group, the Wilcoxon rank-sum test was applied. For intragroup comparisons before and after the intervention, a paired t-test was used when normality was confirmed; if normality was not confirmed in either condition, the Wilcoxon signed-rank test was applied.

Normality was assessed using the Shapiro–Wilk test. All statistical analyses were performed with IBM SPSS Statistics, version 29 (IBM Corp., Armonk, NY, USA) with the significance level of 5%.

2.5.Ethical Considerations

This study was approved by the Research Ethics Committee of the institution to which the principal investigator belongs (Approval No. 2178). The purpose, methods, and details of the measurements were explained to the subjects and their guardians both orally and in writing, and written informed consent was obtained prior to participation.

Figure 4. FIFA11+ for Kids

(from FIFA 11+ for Kids Manual, F-MARCS: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://ubortho.com/wp-

3. Results and Discussion

3.1.Results

In the between-group comparison, the intervention group was significantly older and taller than the control group. Regarding the 50-m sprint time, the control group had significantly higher values before the intervention, whereas no significant difference was observed after the intervention. For the motion scores, there was no significant difference in the 50-m sprint form before the intervention; however, after the intervention, the intervention group showed significantly higher scores. In the standing long jump, the control group had significantly greater values before the intervention, but no significant difference was observed after the intervention.

In the intragroup comparison over the three-month period, height increased significantly in both groups, and body weight increased significantly in the intervention group. In the control group, the 50-

m sprint time decreased significantly, and the distances of the standing long jump and ball throw increased significantly. In the intervention group, only the distance of the ball throw increased significantly. Regarding motion scores, no significant changes were observed in any measure in the control group, whereas the intervention group showed a significant improvement in the standing long jump.

As a result, the intervention group was older and taller than the control group. While both groups showed performance improvements, significant improvements in movement form, particularly in the standing long jump, were observed only in the intervention group.

Table 1. Results of Group Comparison

			Intervention group	Control group	p value	95% CI	ES (d)
Age (years old)			8.2 ± 1.5	7.2 ± 1.6	0.011	[-1.676, -0.224]	0.61
Height (cm)			129.7 ± 10.7	124.1 ± 7.7	0.019	[-10.21, -0.921]	0.56
Weight (kg)			29.1 ± 8.1	25.8 ± 7.0	0.073	[1.831, -6.961]	0.43
50m run	time (sec)	Before	10.3 ± 1.2	11.0 ± 1.4	0.009	[0.198, 1.315]	0.61
		After	10.1 ± 1.1	10.5 ± 1.1	0.148	[-0.134, 0.075]	0.33
	Form	Before	3.33 ± 1.04	3.04 ± 0.96	0.140	[-0.936, 0.023]	0.27
		After	3.36 ± 0.66	2.82 ± 0.98	0.032*	[-0.589, -0.107]	0.70
Standing long jump	Distance (cm)	Before	129.4 ± 18.8	125.5 ± 19.8	0.378	[-12.54, 4.805]	0.20
		After	129.1 ± 21.4	131.6 ± 20.7	0.602	[-7.039, 12.07]	0.12
	form	Before	2.83 ± 0.89	3.41 ± 1.22	0.013*	[0.124, 1.025]	0.58
		After	3.55 ± 1.23	3.38 ± 1.16	0.183	[-0.913, 0.177]	0.014
Ball throw	Distance (m)	Before	11.5 ± 6.5	9.56 ± 4.3	0.154	[-4.638, 0.745]	0.33
		After	15.1 ± 12.2	10.9 ± 4.9	0.087	[-8.898, 0.608]	0.39
	form	Before	3.86 ± 1.02	4.26 ± 0.81	0.076	[-0.043, 0.834]	0.41
		After	4.16 ± 1.00	3.82 ± 0.95	0.135	[-0.776, 0.107]	0.35

ES: effect size (Cohen's d), 95% CI: 95% Confidence Interval, *p<0.05

Table 2. Intra-Group Comparison Results (Intervention Group)

		Before	After	p value	95% CI	ES (d)
Height (cm)		129.7 ± 10.7	133.3 ± 11.1	<0.001*	[-4.356, -3.025]	0.34
Weight (kg)		29.1 ± 8.1	31.0 ± 9.0	<0.001*	[-8.719, -1.552]	0.24
50m run	Time (sec)	10.3 ± 1.2	10.1 ± 1.1	0.125	[-0.026, 0.207]	0.08
	form	3.33 ± 1.04	3.36 ± 0.66	0.801	[-0.195, 0.743]	0.04
Standing long jump	Distance (cm)	129.4 ± 18.8	129.1 ± 21.4	0.613	[-2.476, 4.164]	0.04
	form	2.83 ± 0.89	3.55 ± 1.23	<0.001*	[-0.980, -0.457]	0.67
Ball throw	Distance (m)	11.5 ± 6.5	15.1 ± 12.2	0.019*	[-6.109, -0.570]	0.34

		Before	After	p value	95% CI	ES (d)
	form	3.86 ± 1.02	4.16 ± 1.00	0.062	[-0.513, 0.013]	0.26
ES: effect size (Cohen's d), 95% CI: 95% Confidence Interval, *p<0.05						

Table 3. Intra-Group Comparison Results (Control Group)

		Before	After	p value	95% CI	ES (d)
Height (cm)		124.1 ± 7.7	125.9 ± 7.8	0.007*	[-3.081, -0.543]	0.23
Weight (kg)		25.8 ± 7.0	26.7 ± 7.1	0.099	[-2.089, 0.192]	0.14
50m run	Time (sec)	11.0 ± 1.4	10.5 ± 1.1	0.001*	[0.246, 0.788]	0.49
	form	3.04 ± 0.96	2.82 ± 0.98	0.264	[-0.171, 0.600]	0.23
Standing long jump	Distance (cm)	125.5 ± 19.8	131.6 ± 20.7	0.016*	[-11.11, -1.258]	0.30
	form	3.41 ± 1.22	3.38 ± 1.16	0.380	[-0.338, 0.856]	0.03
Ball throw	Distance (m)	9.56 ± 4.3	10.9 ± 4.9	0.023*	[-2.456, -0.202]	0.29
	form	4.26 ± 0.81	3.82 ± 0.95	0.097	[-0.086, 0.974]	0.51
ES: effect size (Cohen's d), 95% CI: 95% Confidence Interval, *p<0.05						

3.2.Discussion

A characteristic finding of this study was that, in the standing long jump, only the control group showed a significant increase in distance, whereas the intervention group demonstrated significant improvement in form without a corresponding increase in distance. Considering that the control group already exhibited significantly better form prior to the intervention, their improvement in jump distance is likely attributable to physical growth rather than technical changes. In contrast, the intervention group exhibited improved form, which is noteworthy. Rössler et al. (2016) reported that FIFA 11+K led to slight but consistent improvements across nearly all performance tests, including the standing long jump, and suggested that these improvements might contribute to reducing injury risk. Conversely, Gatterer et al. (2018) reported that FIFA 11+K training in 10-year-old soccer players did not affect standing long jump performance, although it might improve stability, thereby supporting its implementation. Taken together, while direct improvements in measurable performance outcomes appear limited, the intervention may have influenced jump mechanics. Previous studies examining the effects of FIFA 11+K on jump performance have reported improvements in landing shock absorption (Teixeira et al., 2023), as well as increases in lower-limb strength, which underpins jump ability (Zarei et al., 2020). Tsai et al. (2020), in a study of adolescent volleyball players, suggested that a training program emphasizing core control and strength, including FIFA 11+K, facilitated more appropriate landing posture, improved core stability, and enhanced lower-limb strength. One reason why the FIFA 11+K program may be effective in improving landing patterns is its inclusion of trunk exercises combined with verbal instructions and feedback, which help promote proper alignment of the lower limbs and body. In this study, form assessment focused on movement strategies emphasizing arm swing during jumping. The significant changes observed in this area are noteworthy, as arm swing during preparatory

movements for jumping may be influenced by the intervention, consistent with prior reports of improved landing strategies.

A significant increase in height was observed in both groups after the intervention, and a significant increase in body weight was found in the intervention group, indicating overall physical growth among the participants. Accordingly, although significant improvements were noted in some performance measures, it is reasonable to assume that part of this improvement can be attributed to physical growth. Based on this, we discuss the specific effects of the present intervention.

In the present study, no significant effects were observed on running or throwing performance. However, regarding running, although the control group's sprint times significantly improved, their form scores decreased and were significantly lower than those of the intervention group after the intervention. The form scores, typically around 3 points, reflect dynamic movement patterns involving the lower limbs, trunk, and upper limbs. The intervention implemented in this study, FIFA 11+K, primarily focused on developing movement patterns centered on balance and jumping actions. Although improvements in body mechanics were anticipated, which could potentially lead to enhanced running form, the direct effects observed may have been insufficient to allow for a definitive evaluation. The form score represents dynamic movement patterns involving the lower limbs, trunk, and upper limbs. To further enhance running form, the incorporation of additional exercise programs specifically tailored to these movement characteristics may be required. Nevertheless, both groups improved in throwing distance, likely due to physical growth. Interestingly, although not statistically significant, form scores decreased in the control group but increased in the intervention group, suggesting that future improvements in lower-limb movement and trunk stability may positively influence throwing form. Sumartiningsih et al. (2022) reported that FIFA 11+K improved static balance, dynamic balance, and leg strength in youth soccer players, indicating that enhanced lower-limb strength and balance capacity may also affect running and throwing performance, an area requiring further study.

Baringo et al. (2014) reported that players with high adherence to the FIFA 11+ program, participating in structured warm-up sessions at least 1.5 times per week, experienced a 35% reduction in overall injury risk and significant improvements in neuromuscular and performance parameters. Participants in this study performed the program twice per week for approximately 15 minutes per session as a warm-up. Despite this relatively short duration, the intervention resulted in observable improvements in movement form, suggesting potential for further development. Although the effects of training frequency and exercise volume were not the focus of the present study and thus cannot be conclusively determined, a duration of approximately 15 minutes appears appropriate, particularly considering the attention span of children. A frequency of at least 1.5 to 2 sessions per week may also be considered desirable. In Japan as well, the FIFA 11+ program has been shown to contribute to injury reduction not only as a preventive tool but also by enhancing implementation fidelity and sustainability through educational and organizational support, highlighting the importance of psychological and institutional backing for effective introduction. Chen et al. (2021) further reported that FIFA 11+K serves as an effective school-based exercise intervention to improve attention in schoolchildren,

suggesting that its benefits extend beyond physical performance. Whilst injury prevention remains the primary objective, the findings of this study suggest that the program may also produce secondary benefits, including improvements in physical performance and movement quality. Moreover, it holds the potential to provide a wider range of advantages for young athletes. Therefore, it is essential to assess the effects of the intervention from a comprehensive and multidimensional perspective.

This study has several limitations. Although progression in exercise levels during the FIFA 11+K intervention was made with instructor agreement, objectivity in this process was not ensured. While the intervention itself is valuable, further consideration should be given to standardizing exercise content and load intensity to ensure fairness. Since the grouping of subjects in this study was not conducted using a completely randomized method, it is difficult to rigorously determine the intervention effect. In addition, although the control group's exercise program was kept consistent with their usual activities, equivalence of training load compared to the intervention group cannot be guaranteed, and thus a more standardized intensity setting should be considered. Furthermore, although standard Japanese national criteria were applied for motion form evaluation, internationally validated criteria are not yet established. It is therefore necessary to reconsider the evaluation indices to allow for more objective and valid assessment of children's motion improvements.

4. Conclusion

One of the contributions that sports physiotherapists can make to youth sports clubs is providing guidance on acquiring proper movement form and designing exercise programs. The results of this study indicate that the FIFA 11+ for Kids program contributes to improvements in jumping movements. Regarding throwing and running movements, it appears necessary to incorporate additional exercise programs that specifically target the relevant movement characteristics. Further investigation into the program's effectiveness may facilitate the development of more effective warm-up interventions in the future. It is anticipated that future research will examine the sustained effects of the intervention, its efficacy for children with lower baseline physical abilities, and potential variations in outcomes based on age and gender.

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