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Effects of 4-week balance training program on executive function in preschool children: A randomized controlled trial

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KEYWORDS
Balance;
Emotional control;
Working memory;
Planning;
Preschool children.

ABSTRACT

Executive function delays have been steadily increasing in early childhood, influencing both academic achievement and life success. Effective interventions to promote executive function development are therefore urgently needed. This study aimed to investigate the effects of a four-week balance training program on executive function in 66 preschool children aged 4–6 years. Participants were randomly assigned to either a balance training group or a control group. The control group continued with the standard preschool curriculum, while the balance training group participated in four structured balance exercises, including double-leg stance, single-leg stance, balance path, and forward hopping on marking sheets for 45 minutes per day, three days per week, over four weeks. Executive function, including inhibition, shifting, emotional control, working memory, and planning, was assessed by teachers using the Executive Function Development Assessment at three time points: before training, after the four-week program, and at an eight-week follow-up. Data were analyzed using the Friedman test and the Mann–Whitney U test, with statistical significance set at p-value < 0.05. Results revealed significant improvements in all executive function domains in both groups after training. Consistent with the hypothesis, the balance training group showed greater gains in emotional control than the control group following four weeks of training. At the eight-week follow-up, the balance training group demonstrated significantly higher levels of emotional control (p-value = 0.036), working memory (p-value = 0.016), and planning (p-value = 0.039) compared to the control group. Improvements in inhibition, emotional control, and planning were particularly pronounced among children in the balance training group. In conclusion, both the standard preschool curriculum and balance training for at least four weeks can enhance executive function development in preschool children. However, the findings suggest that a structured balance exercise program may be more effective in promoting executive function development than the standard curriculum alone.

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Introduction

Executive function (EF) refers to the regulation of cognition through top-down, higher-order mental processes that facilitate goal-directed behavior throughout life. EF comprises three fundamental components, including inhibition, working memory, and shifting. The development of more complex and higher-level EF skills occurs during the preschool years, characterized by the emergence and refinement of these three core components[1]. Preschool children aged 2 to 6 years represent a critical period for EF development[2-4], coinciding with peak myelination and synaptogenesis in the prefrontal cortex[1,4]. Therefore, the preschool years are essential for fostering EF skills across five domains namely inhibition, shifting, emotional control, working memory, and planning[2]. Previous research has suggested that EF skills are stronger predictors of future success than intelligence quotient (IQ) or emotional quotient (EQ)[5]. The level of EF in early childhood plays a crucial role in shaping a child's developmental trajectory, influencing academic achievement and overall life success through mechanisms such as attention, decision-making, and self-regulation[1,2]. Rapid EF development occurs between the ages of 3.5 and 6 years and is strongly correlated with later academic performance in both primary and secondary education [6]. EF can be enhanced through age-appropriate activities and play-based learning. Conversely, deficits in EF skills are associated with learning and behavioral difficulties that may persist into adolescence and adulthood, potentially leading to academic underachievement and diminished life outcomes [2-4]. In Thailand, a previous study reported that more than 30% of 2,965 children aged 2 to 6 years exhibited EF dysfunction. Furthermore, 18.5% of 243 children aged 3 to 6 years demonstrated EF-related difficulties, particularly in inhibition[2]. These findings highlight the urgent need for effective interventions to promote EF development in preschool children.

In recent years, researchers have explored various activities to enhance EF in young children, including aerobic exercise, physical activity programs, dance training, and exergaming[7-9]. For example, a five-week creative dance program conducted twice weekly for 45 minutes per session led to significant improvements in EF compared with baseline measurements[7]. Similarly, an eight-week street dance training program, performed three times weekly for 40 minutes per session, produced notable EF enhancements[8]. These findings suggest that programs integrating movement, rhythm, and aerobic activity engage multiple EF components by requiring children to coordinate sensory and motor systems[7,8]. A recent systematic review reported that motor skills and EF develop concurrently in preschool- and school-aged children[10,11]. Motor skill development is closely associated with EF, with balance and manual dexterity playing key roles in coordination[11,12], which are essential for maintaining movement during various daily activities in childhood[13]. Balance, defined as the ability to maintain the body's center of mass within its base of support through multisensory and cognitive regulation[14-16], consists of both static and dynamic components[14,15]. Balance skills typically mature around six years of age[17], and both static and dynamic balance in children aged 3 to 6 years are positively correlated with gross motor development[18]. All fundamental movement skills arise from postural control and balance, which form the foundation for both basic and complex motor abilities throughout life[16].

Previous research has suggested that multitask balance training programs including static, dynamic, and dual-task training can enhance balance abilities in children[19,20], with an effective training duration of at least 4–6 weeks or 240–360 minutes[21]. However, the effect of balance training on children's EF has not yet been fully elucidated. Therefore, the objective of this study was to investigate the effects of a structured balance exercise program on EF in preschool children, aiming to determine whether such

training can effectively promote all EF domains and serve as an optimal early intervention strategy.

Materials and methods

Study design and participants

This study was a single-blind, randomized controlled trial conducted at Klongbangnamjued School in Samut Prakan Province, Thailand. Participants were selected using convenience sampling from one kindergarten. Ethical approval for the study was obtained from the Human Research Ethics Committee of Huachiew Chalermprakiet University (Approval No. 1307/2566). Based on previous research in which executive function (EF) task scores served as the primary outcome[8], the sample size was estimated using G*Power version 3.1.9.6. The calculation was based on the difference between two independent means, with an effect size of 0.92, an alpha level of 0.05, and a power of 0.95. A total of 66 preschool children from second- and third-year classes were randomly assigned according to classroom to either the balance training group or the control group, with 33 participants in each group. The inclusion criteria were children aged 4 to 6 years who were able to communicate and follow verbal instructions. Each participant's height and weight were assessed according to the age reference chart for children aged 2–7 years developed by the Bureau of Nutrition, Department of Health, Ministry of Public Health, Thailand. Children whose body mass index exceeded +2 standard deviations (SD) were excluded. Moreover, children with a history of neurological or musculoskeletal disorders that could affect balance or executive function (EF), as identified through parent reports and school health screenings, were excluded from the study. Written informed consent was obtained from the parents of all participants prior to enrollment.

Balance exercise program

The balance exercise program was developed based on previous research[20] and is summarized in Table 1. The program replaced the standard preschool physical activity component and consisted of static balance training, dynamic balance training, and dual-task training. Exercise progression was designed to individually challenge each child's balance ability, with the level of difficulty increased progressively according to individual performance. The training program comprised four levels of four tasks: (1) double-leg stance, (2) single-leg stance, (3) balance path, and (4) forward hop on marking sheets. Participants rotated through the four tasks under the supervision of four physical therapy students, who determined each child's appropriate progression level. If a participant was unable to complete a given level, they remained at that level for the duration of the session rather than advancing to the next one. The balance exercise program was conducted three times per week for 45 minutes per session, including a 10-minute warm-up and a 5-minute cool-down, for a total of 12 sessions over four weeks.

Control group

The control group continued the standard preschool curriculum during the four-week study period, which primarily consisted of art-based activities, including drawing and painting.

Table 1 Balance exercise program[20]

Balance exercise	Exercise progression level
Double leg stance 10 seconds, 3 sets	Level 1: double leg stance, eyes closed Level 2: stand on toes, eyes open Level 3: stand on toes, eyes closed Level 4: stand on toes, eyes closed, object in hands
Single leg stance (Both legs) 10 seconds on each leg, 3 sets	Level 1: single leg stance on firm, eyes open Level 2: single leg stance on firm, eyes closed Level 3: single leg stance on form, eyes open Level 4: single leg stance on form, eyes closed
Balance path 4.5 meters, 3 round trips	Level 1: walk on toes in straight line Level 2: walk on toes in curved path Level 3: heel-toe walk in straight line Level 4: heel-toe walk in curved path
Forward hop on marking sheets 10 repetitions on each leg, 3 sets	Level 1: jump on marking sheets Level 2: hop on marking sheets Level 3: jump on marking sheets, object in hands Level 4: hop on marking sheets, object in hands

Executive Function Development Assessment

The primary outcome of this study was the five domains of executive function (EF), assessed using the Executive Function Development Assessment (MU.EF-101), developed by Chutabhakdikul et al[2]. The MU.EF-101 demonstrated acceptable internal consistency, with a reported Cronbach's alpha coefficient of 0.77[2]. This assessment evaluates the frequency of EF behaviors in preschool children aged 2–6 years, based on reports from teachers who had been familiar with the participants for at least three months. Before using the MU.EF-101, teachers received workshop training from a physical therapist. The tool demonstrated good reliability, with intra-rater correlation (ICC = 0.84) and inter-rater correlation (ICC = 0.90). The assessment measures five EF domains: inhibition, shifting, emotional control, working memory, and planning. Responses are rated on a 5-point scale: 0 (never), 1 (1–2 times per month), 2 (1–2 times per week), 3 (3–4 times per week), and 4 (every day), with a total possible raw score of 128 points. The total score allocation is as follows: 40 points for inhibition, 20 points for shifting, 20 points for emotional control, 24 points for working memory, and 24 points for planning. EF behavior is interpreted according to T-scores: >60, much higher than average (very good); 56–60, higher than average (good); 45–55, average (moderate); 40–44, slightly lower than average (needs development); and <40, much lower than average (needs improvement).

Data collection

Data collection is presented in the CONSORT flow diagram of participants (Figure 1). Executive function (EF) behaviors were assessed at three time points: before training (pre-test, T0), after four weeks of training (post-test, T1), and at an eight-week follow-up (T2). Assessments were conducted by four teachers (one teacher per classroom) who were blinded to the participants' group assignments.

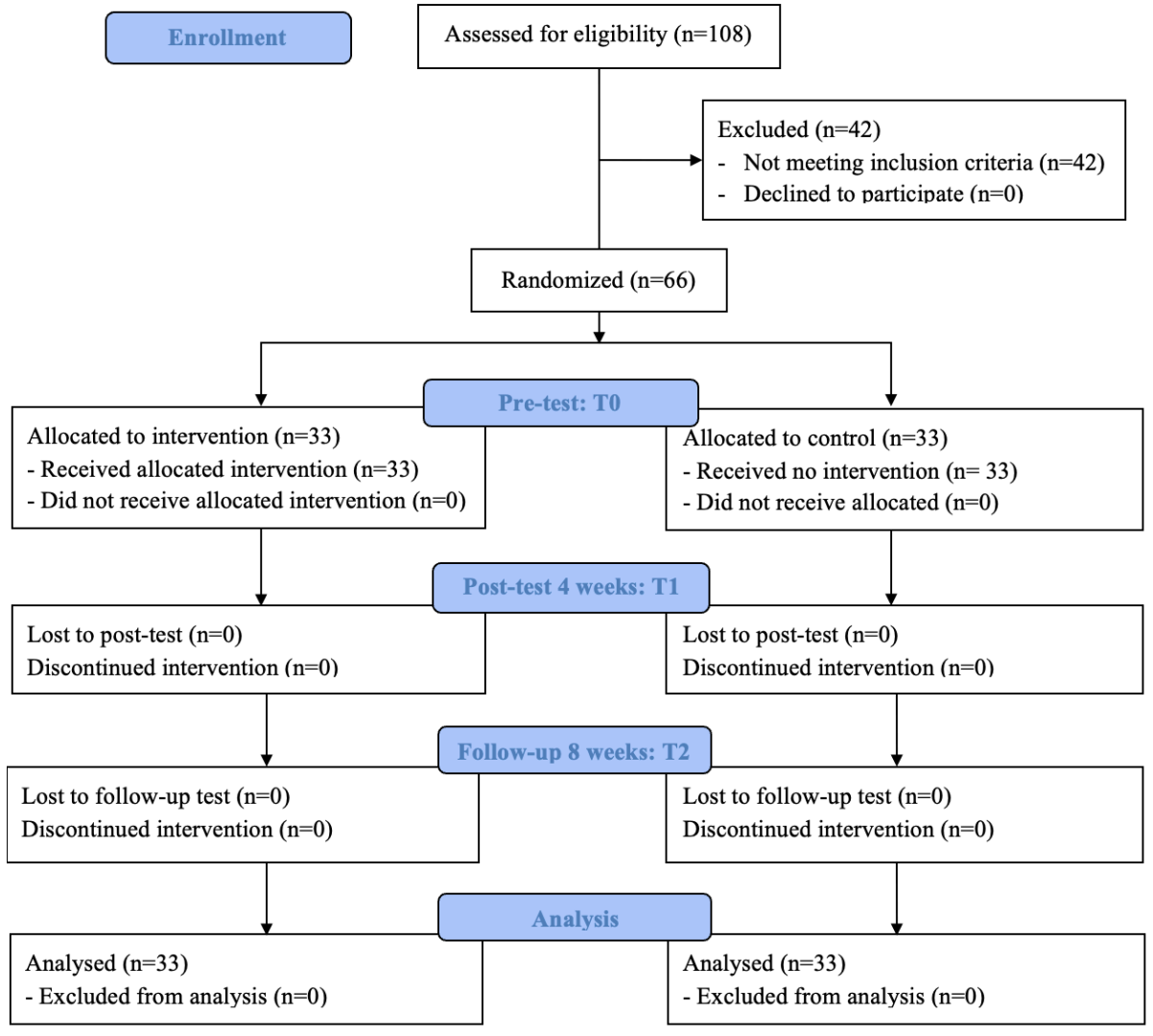

Figure 1 The CONSORT flow diagram of the participants.

Data analysis

Demographic data and EF T-scores were summarized using descriptive statistics, including means ± standard deviations (SD) and frequencies (percentages). The Kolmogorov-Smirnov test indicated that the data were not normally distributed; therefore, non-parametric statistical methods were employed to analyze EF outcomes. Within-group comparisons across the pre-test (T0), post-test (T1), and follow-up (T2) time points were conducted using the Friedman test and the Wilcoxon signed-rank test. Between-group differences were assessed using the Mann-Whitney U test. Additionally, one-way analysis of covariance (ANCOVA) was performed to examine potential baseline differences between groups at pre-test. All statistical analyses were conducted with a significance level set at p-value < 0.05.

Results

The demographic characteristics of the participants are presented in Table 2. There were no significant differences between the groups in any of the demographic variables.

Table 2 Demographic characteristics of the participants

Variable	Control group (n=33)	Balance group (n=33)	*p-value*
Age (year); (mean ± SD)	5.01±0.56	4.82±0.48	0.14
Weight (kilogram); (mean ± SD)	17.18±2.43	17.52±3.14	0.53
Height (centimeter); (mean ± SD)	108.03±5.31	104.42±16.47	0.39
Weight-height for age; (n/%)			0.54
Chubby (+1.5 SD to +2 SD)	1/3.00	1/3.00	
Slender (-1.5 SD to +1.5 SD)	27/81.80	29/87.90	
Underweight (-2 SD to -1.5 SD)	3/9.10	1/3.00	
Thin (< -2 SD)	2/6.10	2/6.10	
Sex; (n/%)			0.45
Male	11/33.30	14/42.40	
Female	22/66.70	19/57.60	

The EF raw scores of all participants are summarized in Table 3. Within-group analyses revealed significant improvements in EF behaviors after four weeks of training and at the eight-week follow-up for both groups compared with pre-test scores (T0–T1 and T0–T2, *p*-value < 0.001). However, comparisons between post-test and follow-up (T1–T2) showed some declines. In the control group, working memory (*p*-value = 0.042), planning (*p*-value = 0.004), and total EF score (*p*-value = 0.024) significantly decreased. In the balance training group, shifting (*p*-value = 0.042) and emotional control (*p*-value = 0.007) showed a significant decline between post-test and follow-up. Between-group analysis indicated that the balance group demonstrated significantly higher emotional control than the control group at post-test (*p*-value = 0.002). At the eight-week follow-up, the balance group exhibited significantly better emotional control (*p*-value = 0.036), working memory (*p*-value = 0.016), and planning (*p*-value = 0.039) compared to the control group. Nevertheless, one-way analysis of covariance (ANCOVA) revealed no significant differences between the groups in any EF domain.

The EF T-score distribution, presented as percentages of participants, is shown in Figure 2. After the four-week balance training program, 100% of participants in the balance group demonstrated moderate to very good EF behaviors across all five domains at both post-test and follow-up. In contrast, some participants in the control group continued to display slightly lower than average or much lower than average EF T-scores, indicating areas in need of development. At post-test, participants in the control group who required EF development were: inhibition (3%), shifting (3%), emotional control (6.1%), working memory (6.1%), planning (6.1%), and total EF (3%). At follow-up, participants needing EF development in the control group included inhibition (3%), shifting (6.1%), working memory (9.1%), and planning (15.2%). Additionally, at follow-up, participants requiring improvement in EF behaviors were: inhibition (3%), shifting (3%), emotional control (3%), working memory (6.1%), planning (3%), and total EF (3%).

Table 3 The raw scores of the executive function behavior

Executive function		Groups of subjects		*p*-value[a]	*p*-value[b] (ANCOVA)
		Control group (n=33)	Balance group (n=33)		
Inhibition	Pre-test (T0)	26.15 ± 8.28	32.45 ± 5.78	0.001*	0.001
	Post-test (T1)	35.00 ± 6.69	37.18 ± 3.36	0.754	0.138
	Follow-up (T2)	35.21 ± 7.44	37.33 ± 3.06	0.822	0.055
	p-value[c]	<0.001	<0.001		
	T0-T1	<0.001	<0.001		
	T0-T2	<0.001	<0.001		
	T1-T2	0.753	0.608		
Shifting	Pre-test (T0)	12.61 ± 3.12	15.70 ± 2.60	<0.001	<0.001
	Post-test (T1)	17.24 ± 3.21	18.73 ± 1.91	0.830	0.568
	Follow-up (T2)	16.70 ± 3.96	17.79 ± 1.96	0.677	0.067
	p-value[c]	<0.001	<0.001		
	T0-T1	<0.001	<0.001		
	T0-T2	<0.001	<0.001		
	T1-T2	0.141	0.042*		
Emotion control	Pre-test (T0)	12.45 ± 3.07	16.67 ± 2.62	<0.001	<0.001
	Post-test (T1)	16.85 ± 3.17	19.24 ± 1.66	0.002*	0.907
	Follow-up (T2)	16.39 ± 3.82	18.58 ± 1.62	0.036*	0.068
	p-value[c]	<0.001	<0.001		
	T0-T1	<0.001	<0.001		
	T0-T2	<0.001	<0.001		
	T1-T2	0.264	0.007*		
Working memory	Pre-test (T0)	14.36 ± 4.66	18.81 ± 3.35	<0.001	<0.001
	Post-test (T1)	20.64 ± 4.28	22.67 ± 2.25	0.051	0.494
	Follow-up (T2)	19.55 ± 5.23	22.82 ± 1.67	0.016*	0.776
	p-value[c]	<0.001	<0.001		
	T0-T1	<0.001	<0.001		
	T0-T2	<0.001	<0.001		
	T1-T2	0.042*	0.775		
Planning	Pre-test (T0)	14.97 ± 4.23	19.39 ± 3.26	<0.001	<0.001
	Post-test (T1)	21.67 ± 3.76	23.12 ± 1.88	0.293	0.144
	Follow-up (T2)	19.67 ± 4.97	22.70 ± 1.45	0.039*	0.993
	p-value[c]	<0.001	<0.001		
	T0-T1	<0.001	<0.001		
	T0-T2	<0.001	<0.001		
	T1-T2	0.004*	0.139		

Table 3 The raw scores of the executive function behavior

Executive function		Groups of subjects		*p*-value[a]	*p*-value[b]
		Control group (n=33)	Balance group (n=33)		(ANCOVA)
Total	Pre-test (T0)	80.55 ± 22.79	103.03 ± 15.35	<0.001	<0.001
	Post-test (T1)	111.39 ± 20.08	120.94 ± 7.32	0.419	0.100
	Follow-up (T2)	107.52 ± 24.41	119.21 ± 7.67	0.419	0.061
	p-value[c]	<0.001	<0.001		
	T0-T1	<0.001	<0.001		
	T0-T2	<0.001	<0.001		
	T1-T2	**0.024***	0.083		

Note: Data reported as mean ± standard deviation, the unit of measurement is points, T0-T1; within-group differences between pre-test to pos-test, T0-T2; within-group differences between pre-test to follow-up, T1-T2; within-group differences post-test to follow-up, *significance tested at <0.05, *p*-value[a] Mann-Whitney test, *p*-value[b] ANCOVA, *p*-value[c] Friedman test

Discussion

Our study indicated that a four-week balance exercise program can enhance executive function (EF) development in preschool children aged 4–6 years, particularly in the balance training group. Notably, significant differences in EF raw scores between groups at baseline may have influenced post-test outcomes due to potential ceiling effects. However, when examining EF development using T-scores, most participants in the balance exercise group exhibited moderate to very good EF skills across all domains at both post-test and follow-up. In contrast, some participants in the control group continued to show slightly below average to well below average EF T-scores across all domains, indicating a need for further development and support in EF skills. These findings suggest that children who participate in the balance exercise program may have greater opportunities to enhance their EF capabilities.

Previous research has emphasized that Thai children aged 5–6 years require interventions to improve inhibition and emotional control[22]. This aligns with our findings, as children in the control group demonstrated less improvement in shifting and emotional control compared with those in the balance exercise group. Emotional control and planning are critical components of higher-order EF regulation during early childhood, developing from foundational EF skills such as inhibition and cognitive flexibility, and evolving throughout development[23,24]. Numerous studies[24] have highlighted the importance of EF in school-aged children, particularly in supporting academic performance, social functioning, and emotional regulation. As children enter structured social and educational settings, the demands for self-control and EF regulation increase.

Diamond et al[9] suggested that a variety of activities, including physical activity and school curricula, can enhance executive function (EF). Classroom curricula led by regular teachers, such as reading, mathematics, and drawing, have been shown to improve EF skills in children aged 4–5 years. In addition, diverse physical activities, including martial arts, yoga, aerobics, and mindfulness, can promote EF development and may be incorporated into school curricula[9]. Therefore, a comprehensive approach that integrates emotional, social, and physical development rather than focusing exclusively on either physical activity or classroom instruction may be an effective strategy for enhancing EF and,

consequently, academic achievement. Our findings indicate that children in the balance group, who participated in both physical activities and routine school tasks, exhibited significant improvements in EF.

Consistent with our results, previous studies[25,26] have demonstrated that various physical activity programs positively influence EF during early childhood. These interventions were designed to be active, enjoyable, and socially engaging[25,26]. Best[25] reported that coordinating multiple movements in dynamic, goal-directed tasks is effective for EF development. Similarly, Nejati[26] found that dual-task balance and cognitive activities can enhance EF and reduce symptoms in children with attention deficit hyperactivity disorder (ADHD). Although balance is often considered an automatic activity, it still requires attention, cognitive flexibility, inhibition, and working memory, particularly under unpredictable conditions or dual-task scenarios. Likewise, the balance program in the present study included unstable surfaces, interrupted sensory input, and dual-task challenges, all based on goal-directed balance tasks. In contrast, Şendil et al[27] reported no significant effects on inhibitory control following an 8-week structured coordination exercise program, which included locomotor and balance skills training. Differences in study outcomes may be attributable to sample characteristics and context: Şendil et al's study included a higher proportion of boys recruited from forty-one kindergartens with potentially varying curricula and physical education schedules. In comparison, the present study was conducted in a single kindergarten with a greater proportion of girls.

Despite these findings, our study demonstrates that incorporating a balance exercise program into the classroom curriculum significantly enhances the frequency of positive EF-related behaviors, resulting in overall improved EF development in the balance group. Balance exercises require the coordination of multisensory systems and cognitive processes, including attention and executive function[28]. Attention, a core EF component, enables children to focus on environmental stimuli, thereby supporting EF performance[29]. The relationship between EF and balance is mediated by the cortical-ponto-cerebellar pathway[30,31]. Previous research has shown that cerebellar damage is a risk factor for dysexecutive function and social-emotional difficulties in children[32]. Similarly, damage to the cerebral cortex, basal ganglia, or cerebellum can impair cognitive functions related to balance. The prefrontal cortex plays a critical role in regulating EF skills, such as planning and attention, which are essential for goal-directed skilled movement[30,31]. Moreover, the dorsolateral prefrontal cortex is particularly important for EF regulation, and brain maturation in children aged 4–6 years significantly contributes to cognitive development, especially inhibition[33,34]. Therefore, balance and EF are interconnected through multiple components of the nervous system, particularly the prefrontal cortex. Children who practice balance tasks simultaneously engage their EF skills, thereby promoting EF development.

However, this study has several limitations. Conducted in a single school, the findings may have limited generalizability, and the study did not include comparisons with other interventions, such as aerobic exercise or dance training. Additionally, EF assessments completed by teachers may have been subject to observer bias. Future research should address these limitations, including determining the optimal comprehensive balance training protocol in larger and more diverse populations. Moreover, outcome measurements for investigating EF development should consider both EF domains and associated neuronal adaptations.

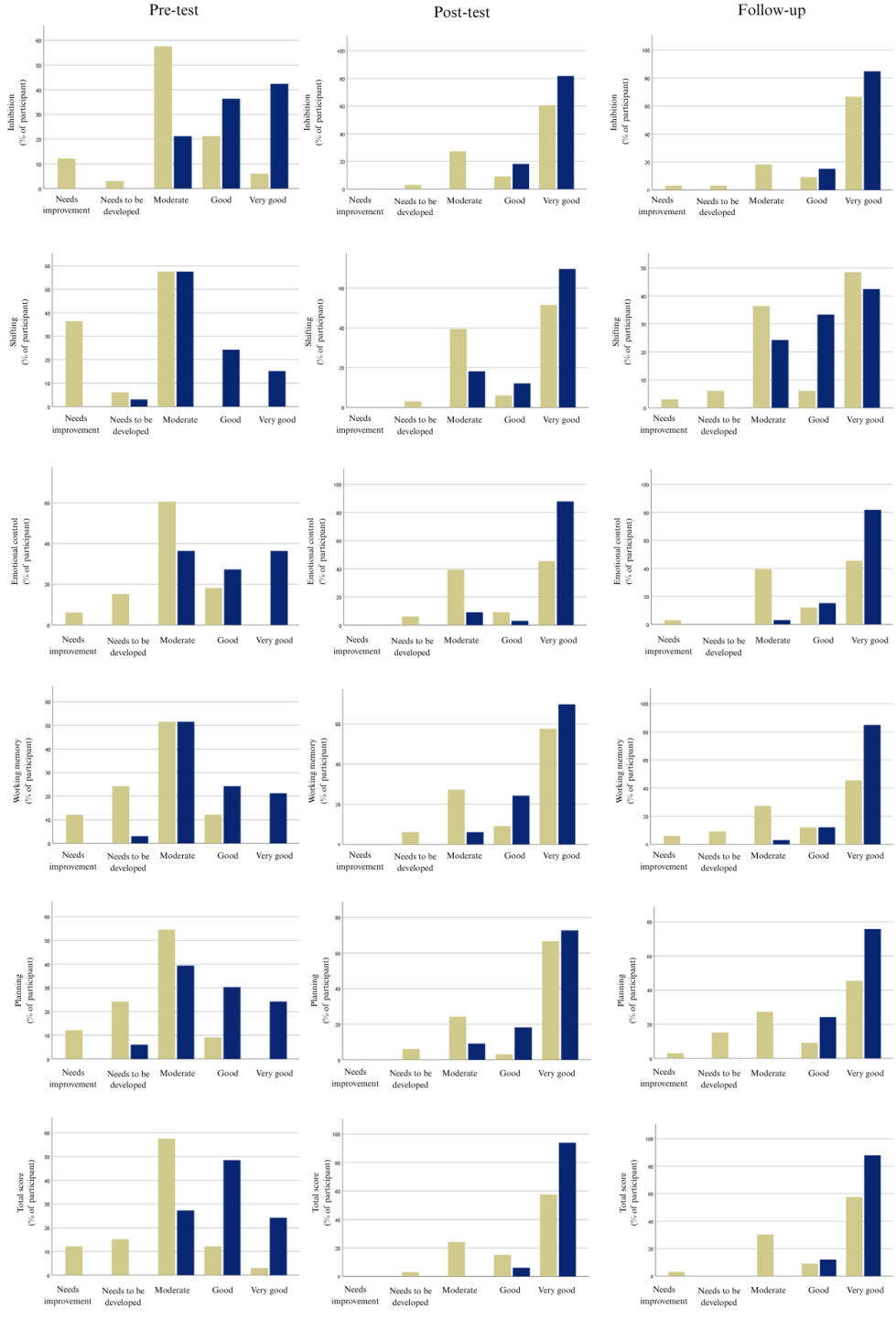

Figure 2 Executive function T-score interpretation.

Note: Data are presented as the percentage (%) of participations; gray bars indicate the control group, and blue bars indicate the balance training group

Conclusion

A four-week balance exercise program can effectively enhance executive function (EF) development in preschool children more than a standard preschool curriculum. These findings provide guidance for educators to integrate balance exercises into regular preschool activities, such as physical education classes, to support and enhance children's EF development.

Take home messages

The four-week balance exercise program is a feasible and effective strategy for promoting executive function development in preschool children aged 4–6 years. Incorporating this program into a standard preschool curriculum can optimize developmental outcomes in EF skills.

Conflicts of interest

The authors declare no conflict of interest.

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Author contributions

Supanee Chounchay: Conceptualization, Methodology, Formal analysis, Writing – Original draft, Review & Editing.

Jenjira Assapun: Conceptualization, Methodology, Data collection, Formal analysis.

Boonrat Ngowtrakul: Conceptualization, Data collection, Formal analysis.

Wannisa Saenphan: Conceptualization, Data collection, Formal analysis.

Data availability

Data available on request due to privacy/ethical restrictions

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Supplementary

Supplementary table 1 The executive function T-score interpretation.

Executive function	T-score interpretation	Control group (n=33)						Balance group (n=33)					
		Pre-test		Post-test		Follow-up		Pre-test		Post-test		Follow-up	
		N	%	N	%	N	%	N	%	N	%	N	%
Inhibition	Very good	2	6.1	20	60.6	22	66.7	14	42.4	27	81.8	28	84.8
	Good	7	21.2	3	9.1	3	9.1	12	36.4	6	18.2	5	15.2
	Moderate	19	57.6	9	27.3	6	18.2	7	21.2	0	0.0	0	0.0
	Needs to be developed	**1**	**3.0**	**1**	**3.0**	**1**	**3.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
	Needs improvement	4	12.1	0	**0.0**	**1**	**3.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Shifting	Very good	0	0.0	17	51.5	16	48.5	5	15.2	23	69.7	14	42.4
	Good	0	0.0	2	6.1	2	6.1	8	24.2	4	12.1	11	33.3
	Moderate	19	57.6	13	39.4	12	36.4	19	57.6	6	18.2	8	24.2
	Needs to be developed	2	6.1	1	3.0	2	6.1	1	3.0	0	0.0	0	0.0
	Needs improvement	**12**	**36.4**	**0**	**0.0**	**1**	**3.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Emotional control	Very good	0	0.0	15	45.5	15	45.5	12	36.4	29	87.9	27	81.8
	Good	6	18.2	3	9.1	4	12.1	9	27.3	1	3.0	5	15.2
	Moderate	20	60.6	13	39.4	13	39.4	12	36.4	3	9.1	1	3.0
	Needs to be developed	5	15.2	2	6.1	0	0.0	0	0.0	0	0.0	0	0.0
	Needs improvement	2	6.1	0	0.0	1	3.0	0	0.0	0	0.0	0	0.0
Working memory	Very good	0	0.0	19	57.6	15	45.5	7	21.2	23	69.7	28	84.8
	Good	4	12.1	3	9.1	4	12.1	8	24.2	8	24.2	4	12.1

Executive function	T-score interpretation	Control group						Balance group					
		Pre-test		Post-test		Follow-up		Pre-test		Post-test		Follow-up	
		N	%	N	%	N	%	N	%	N	%	N	%
	Moderate	17	51.5	9	27.3	9	27.3	17	51.5	2	6.1	1	3.0
	Needs to be developed	8	24.2	2	6.1	3	9.1	1	3.0	0	0.0	0	0.0
	Needs improvement	4	12.1	0	0.0	2	6.1	0	0.0	0	0.0	0	0.0
Planning	Very good	0	0.0	22	66.7	15	45.5	8	24.2	24	72.7	25	75.8
	Good	3	9.1	1	3.0	3	9.1	10	30.3	6	18.2	8	24.2
	Moderate	18	54.5	8	24.2	9	27.3	13	39.4	3	9.1	0	0.0
	Needs to be developed	8	24.2	2	6.1	5	15.2	2	**6.1**	**0**	**0.0**	**0**	**0.0**
	Needs improvement	**4**	**12.1**	**0**	**0.0**	**1**	**3.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Total EF	Very good	1	3.0	19	57.6	19	57.6	8	24.2	31	93.9	29	87.9
	Good	4	12.1	5	15.2	3	9.1	16	48.5	2	6.1	4	12.1
	Moderate	19	57.6	8	24.2	10	30.3	9	27.3	0	0.0	0	0.0
	Needs to be developed	**5**	**15.2**	**1**	**3.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
	Needs improvement	4	12.1	0	0.0	1	3.0	0	0.0	0	0.0	0	0.0