

EFFECTS OF A PSYCHOMOTOR TRAINING ON LOCOMOTOR SKILLS AMONG CHILDREN

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Abstract

This study aimed to investigate the effects of a 12-week psychomotor training intervention on locomotor skills among young children. Forty schoolgirls aged 6 to 7 years from Tiruchendur Taluk, Tamil Nadu, were randomly assigned to either an intervention group (n=20) or a control group (n=20). The intervention group participated in three training sessions per week, focusing on activities designed to enhance walking and skipping skills. Pre-test and post-test assessments of locomotor skills were conducted using the MOBAK test Edison 2. Paired sample t-tests were used to analyze pre-test and post-test scores within each group, while analysis of covariance (ANCOVA) was employed to compare post-test scores between the intervention and control groups, controlling for potential covariates. Results indicated significant improvements in walking and skipping abilities among participants in the intervention group ($p < 0.05$). Conversely, no significant changes were observed in the control group. The ANCOVA analysis further supported the intervention's efficacy, revealing significant differences in post-test scores between the two groups ($p < 0.05$). These findings provide compelling evidence for the effectiveness of psychomotor training interventions in enhancing locomotor skills among young children, highlighting the importance of structured training programs in promoting motor skill development during early childhood.

Keywords: Psychomotor Training, Locomotor Skills.

Introduction:

In the realm of child development, the acquisition and refinement of locomotor skills play a pivotal role in facilitating physical activity engagement, social interaction, and overall well-being (Gallahue & Ozmun, 2012). Locomotor skills, encompassing movements such as running, jumping, hopping, and skipping, serve as foundational components for a child's physical competence and confidence in navigating their environment (Goodway & Rudisill, 1997). However, not all children develop these skills at the same pace or with the same proficiency.

The significance of locomotor skills lies in their multifaceted impact on various aspects of a child's life, including physical health, cognitive development, and socio-emotional functioning (Stodden et al., 2008). Proficiency in locomotor skills not only enhances physical fitness but also fosters spatial awareness, coordination, and problem-solving abilities (Logan et al., 2012). Furthermore, mastery of these skills is closely linked to self-esteem and peer acceptance, as they enable children to participate actively in recreational activities and sports, thereby promoting social integration and positive peer relationships (Fisher et al., 2011).

Despite the inherent importance of locomotor skills, research indicates that many children struggle to attain adequate proficiency in these fundamental movements (Robinson et al., 2015). Factors such as sedentary lifestyles, limited access to safe play environments, and insufficient physical education opportunities can impede the development of locomotor skills among children (Stodden et al., 2008). Consequently, there is a growing need for effective interventions aimed at enhancing locomotor skill acquisition and promoting physical activity engagement among children.

One promising approach to addressing this need is psychomotor training, which integrates cognitive, affective, and physical elements to optimize motor learning and skill development (Gallahue & Ozmun, 2012). Psychomotor training programs are designed to systematically target specific motor skills while also addressing underlying cognitive processes and socio-emotional factors that influence movement performance (Gabbard, 2011). By incorporating structured activities, feedback mechanisms, and progressive challenges, psychomotor training aims to enhance motor coordination, balance, and control, thereby empowering children to become more proficient and confident in their locomotor abilities.

Methodology

Participants:

The study will involve a total of 40 schoolgirls from Tiruchendur Taluk, Tamil Nadu, with ages ranging between 6 to 7 years. Participants will be randomly assigned to either an intervention group (n=20) or a control group (n=20).

Intervention: The intervention group will undergo a 12-week training period, with sessions held three days a week on Monday, Wednesday, and Friday. The training program will consist of a series of psychomotor activities specifically designed to enhance locomotor skills, focusing on walking and skipping, which are fundamental movements for this age group.

Weeks 1-3: Introduction to Basic Movements

- Week 1: Introduction to the program, basic warm-up exercises (stretching, jogging in place).
- Week 2: Introduction to locomotor skills (walking, running, hopping, galloping), basic coordination drills.
- Week 3: Introduction to object control skills (throwing, catching, kicking), hand-eye coordination activities.

Weeks 4-6: Balance and Coordination

- Week 4: Balance exercises (standing on one leg, walking on a balance beam), coordination games (Simon says, follow the leader).
- Week 5: Coordination drills (jumping jacks, skipping), obstacle courses focusing on agility and coordination.
- Week 6: Introduction to spatial awareness activities (moving around obstacles, navigating through cones), more complex coordination games.

Weeks 7-9: Fine Motor Skills

- Week 7: Fine motor skill activities (finger painting, stringing beads, cutting with scissors).

- Week 8: Handwriting readiness exercises (tracing shapes, drawing lines and curves), finger dexterity games.
- Week 9: Introduction to basic sports skills (dribbling a ball, shooting a ball into a target), hand-eye coordination drills.

Weeks 10-12: Integration and Application

- Week 10: Integration of previously learned skills into games (tag, relay races), cooperative activities.
- Week 11: Team-building activities emphasizing cooperation and communication, group sports games (soccer, basketball).
- Week 12: Culmination week with a focus on applying all learned skills in various activities, mini sports day event to showcase progress and celebrate achievements.

These activities will be conducted in a safe and supervised environment, with appropriate modifications made to accommodate individual skill levels and abilities.

Assessment: The locomotor skills of walking and skipping were assessed using the MOBAK test Edison 2. This standardized tool is widely used for evaluating motor skills.

Statistics: To analyze the data, paired sample t-tests was used to compare pre-test and post-test scores within each group. Additionally, analysis of covariance (ANCOVA) was conducted to compare the post-test scores between the intervention and control groups while controlling for any potential covariates. The level of significance was set at $p < 0.05$.

Analysis of Data

Table 1 presents the means and standard deviations of each continuous variable by the two groups such as experimental and control group.

Table - 1

Summary of mean and paired sample ‘t’ test between pre and post test

Experimental Group							
Variable	Test	Mean	N	SD	T test	df	p value
Walking	pretest	1.10	10	0.74	3.28	9	.01
	post test	1.80	10	0.42			
Skipping	pretest	0.80	10	0.63	6.00	9	.00
	post test	1.60	10	0.52			
Control Group							
Walking	pretest	0.90	10	0.57	1.00	9	.34
	post test	1.00	10	.47			
Skipping	pretest	1.00	10	.94	1.50	9	.17
	post test	1.20	10	.79			

The obtained p-values for walking and skipping scores in the experimental and control groups indicate the significance of changes observed from pre-test to post-test. In the

experimental group, the p-values for walking ($p = 0.010$) and skipping ($p = 0.000$) are both less than the 0.05 level of significance, demonstrating statistically significant improvements in locomotor skills following the psychomotor training intervention. Conversely, in the control group, the p-values for walking ($p = 0.34$) and skipping ($p = 0.17$) are both greater than 0.05, suggesting that there were no significant changes in locomotor skills over time without intervention. These results underscore the effectiveness of the psychomotor training program in enhancing locomotor skills among young children, as evidenced by the significant improvements observed in the experimental group compared to the control group.

Table 2 Summary of ANCOVA between experimental and control group

Variable	Adjusted posttest mean		Sum of Squares	df	Mean Square	F	p value
	Experimental group	Control group					
Walking	1.76	1.04	2.51	1	2.51	18.68	.000
			2.29	17	0.14		
Skipping	1.67	1.13	1.44	1	1.44	11.12	.004
			2.20	17	0.13		

The ANCOVA results reveal significant differences in post-test scores for both walking and skipping variables between the experimental and control groups, with p-values of 0.000 and 0.004 respectively, both less than the 0.05 level of significance. These findings indicate that even after controlling for potential covariates, there are statistically significant differences in locomotor skills between the two groups. Specifically, participants who underwent the psychomotor training intervention exhibited significantly higher post-test scores for walking and skipping compared to those in the control group.

Discussion on findings

The findings of the study provide compelling evidence for the efficacy of psychomotor training interventions in enhancing locomotor skills among young children. The significant improvements observed in both walking and skipping abilities among participants in the experimental group highlight the positive impact of structured training programs on motor skill development. These results are consistent with previous research demonstrating the effectiveness of psychomotor training in improving locomotor skills and overall physical competence in children.

The findings of the study align with previous research demonstrating the positive effects of psychomotor training interventions on locomotor skills in children. A study conducted by Lubans et al. (2016) implemented a 12-week fundamental movement skills intervention in primary school children and found significant improvements in locomotor skills such as running, jumping, and hopping. Similarly, Barnett et al. (2016) conducted a systematic review and meta-analysis of motor skill interventions in children and concluded that such interventions have a positive impact on locomotor skills development.

Furthermore, research by Robinson et al. (2015) examined the effects of a 10-week motor skills intervention on locomotor skills in preschool-aged children and reported significant improvements in skills such as running, hopping, and galloping. Additionally, a study by Hulteen et al. (2018) investigated the effectiveness of a school-based physical activity intervention on locomotor skills in elementary school children and found that the intervention led to significant improvements in running, jumping, and hopping abilities.

Moreover, the results of the current study are consistent with findings from longitudinal studies examining the long-term effects of motor skill interventions on locomotor skills development. For instance, a longitudinal study by Bardid et al. (2019) followed children over a period of six years and found that participation in structured motor skill interventions during early childhood was associated with better locomotor skills later in life.

Overall, the collective evidence from these studies supports the effectiveness of psychomotor training interventions in improving locomotor skills among children. By emphasizing the importance of structured interventions in promoting motor skill development, these findings underscore the significance of incorporating psychomotor training into educational and physical activity programs for children.

Conclusion

In conclusion, the findings of this study contribute to the growing body of evidence supporting the effectiveness of psychomotor training interventions in improving locomotor skills among young children. By providing empirical support for the positive impact of structured training programs on motor skill development, this research underscores the importance of incorporating psychomotor training into early childhood education and physical activity initiatives. These findings have important implications for promoting physical literacy and healthy lifestyle habits among children, ultimately contributing to their overall well-being and development.

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