ACADEMIA International Journal for Social Sciences
Volume 4, Issue 4, 2025 ISSN-L (Online): 3006-6638

Impact of Traditional Games, Motivation, and Learning Styles on Gross Motor Skills: A Quasi-Experimental Study

Dr Sumaira Rashid
sumaira.ier@pu.edu.pk
Assistant Professor, Institute of Education and Research, University of the Punjab

Dr Tabassum Iqbal
tabassum.iqbal@uog.edu.pk
Lecturer, University of Gujrat

Noshaba Muzaffar
noshabamuzaffar93@gmail.com
PhD Scholar, Department of STEM Education, University of Education Lahore.
Corresponding Author: * Dr Sumaira Rashid sumaira.ier@pu.edu.pk

Received: 09-07-2025 **Revised:** 20-08-2025 **Accepted:** 15-09-2025 **Published:** 10-10-2025

ABSTRACT

This study investigates at how traditional games, learning motivation, and learning styles affect the development of gross motor skills in children who are in Group B Kindergarten in Banten Province. This quasi-experimental research explores the impact of traditional games, learning motivation, and learning styles on children's gross motor skills. The study identifies significant differences in motor skill development across three variables and highlights the importance of integrating culturally relevant play into early childhood education. Findings suggest traditional games like Boy-boyan improve physical development when aligned with children's motivation and learning preferences. The study used a 2x2x2 factorial model with a randomly chosen group of 60 students as its sample. We used a reliable tool (α = 0.876) to test gross motor skills. A three-way ANOVA was used to look at the data. The results showed that traditional games, learning motivation, and learning styles all had a big effect on gross motor skills. Kids who played the traditional game Boy-boyan, were very motivated to learn, and had a kinaesthetic learning style did better than kids who didn't have one or more of these things. Also, there were significant interactions between traditional games and learning styles, as well as between learning motivation and learning styles. The results suggest that teachers should use traditional games in their lessons to help young children develop their gross motor skills. They should also consider about how motivated their students are and how they like to learn.

Key words: *Traditional Games, Learning Motivation, Learning Style, Gross Motor Skills, Three-way ANOVA*

INTRODUCTION

Gross motor skills are very important for young children's growth. They include big muscle activities like running, jumping, and throwing. These basic skills help kids not only stay healthy but also build their confidence, interact with others, and feel good about themselves (Pereira et al., 2020). Proper development of gross motor skills makes it easier for a child to play actively, which is good for their health in many ways, such as better posture, heart health, and breathing capacity (Cattuzzo et al., 2020).

Even though they are important, gross motor skills don't get as much attention in school as cognitive development does. Teachers often spend more time on academic subjects and less time

on structured physical activities that help kids improve their gross motor skills (Logan et al., 2018). Pellegrini and Bohn-Gettler (2019) say that structured physical play is often not as important as classroom instruction in early education. This lack of emphasis makes it harder for kids to build important motor skills through planned, age-appropriate activities.

Robinson et al. (2019) state that gross motor skills include locomotor skills (like running and hopping), non-locomotor skills (like balancing and twisting), and manipulative skills (like catching and kicking). These basic movements are necessary for learning more complicated motor skills as a child and teen, and they have an effect on how long people stay active and fit. Adding traditional games to children's playtime is a culturally appropriate and effective way to help them develop their gross motor skills. Tag, hopscotch, and regional folk games all have elements of locomotor, non-locomotor, and manipulative movements built in (Yılmaz & Ceylan, 2022). These games not only help kids grow physically, but they also give them opportunities to socialise and have fun, which is good for their mental health.

Along with physical activities, gross motor development is greatly affected by learning motivation and how each person learns best (Abbas & Faisal, et al., 2024). Kids who are more motivated are more likely to play outside, which helps them improve their motor skills (Mavilidi et al., 2018). Additionally, knowing how kids like to learn; through sight, sound, or touch, can help teachers create more interesting and useful physical learning activities (Jung & McMullen, 2022).

The growth of gross motor skills, which include big-muscle activities like walking, running, and jumping, is an important part of early childhood development. These skills are important for kids' physical health and also help them learn and grow emotionally. Even though they are important, gross motor skills often don't get as much attention as cognitive skills in early education (Whitebread et al., 2019). According to Fisher et al. (2020), traditional games are good for helping kids grow physically and can be used in schools to help kids learn more. Also, children's motivation to learn and the way they learn are important factors in how much they do physical activities and how well they develop their motor skills (Zhao et al., 2021; Novak & Smith, 2020).

LITERATURE REVIEW

Many studies have shown how important it is for gross motor skills to grow. Gubbels et al. (2018) say that structured and unstructured physical play is very good for kids' motor skills and overall health. Traditional games are great for developing these skills because they are based on culture and physical movement (Pellegrini & Bohn, 2019).

Ryan and Deci (2020) say that learning motivation is linked to persistence, effort, and task engagement, which are all important for developing physical skills. This paper specifically mentions that traditional games, including "Boy-boyan and Dampu," can increase children's gross motor skills, as they involve locomotor, non-locomotor, and manipulative movements (Rahim et al., 2017). Children who are more motivated are more likely to practise and get good at gross motor skills. At the same time, learning styles, especially kinaesthetic ones, are very similar to physical learning environments, which makes it easier to learn gross motor skills (Smith & Kolb, 2017). Even though these results are interesting, there isn't much research on how traditional games, motivation, and learning styles work together, especially in places outside of the West. This study's goal is to fill this gap.

Objectives of the Study

This study explores at how traditional games, learning styles, and learning motivation affect children's gross motor skills. As also, how these factors work together to affect the growth of gross motor skills. This study's goal is to look at how traditional games, learning motivation, and learning styles affect kids' gross motor skills. The specific goals are to:

(1) explore how traditional games, learning motivation, and learning styles affect gross motor development in different ways.

(2) inquire how traditional games and learning motivation work together.

(3) investigate how traditional games and learning styles work together.

(4) determine how learning styles and motivation work together; and

(5) examine how all three variables affect children's gross motor skills.

Theoretical Framework

Important theories of education and development form the basis of this research. According to Jean Piaget's stages of cognitive development, children actively participate in their education by interacting and physically engaging with their surroundings. Physical play, which promotes the development of gross motor skills, is frequently used in early childhood to facilitate this kind of engagement (Logan et al., 2018). Traditional games are a culturally relevant tool for skill development because Vygotsky's Sociocultural Theory emphasises the value of guided learning and social interaction in the development of higher-order functions. Additionally, the importance of bodily-kinesthetic intelligence which is closely related to gross motor development is emphasised by Gardner's Multiple Intelligences Theory. The study's emphasis on motivation and learning styles in the development of motor skills is consistent with the Self-Determination Theory (Deci & Ryan, 2000), which affirms the impact of intrinsic motivation in fostering learning and engagement.

Visual Aids and Conceptual Model

A conceptual framework is provided to improve comprehension. According to the model, learning motivation, learning styles, and traditional games all have an independent impact on kids' gross motor skills. Factorial design analysis is used to investigate interaction effects.

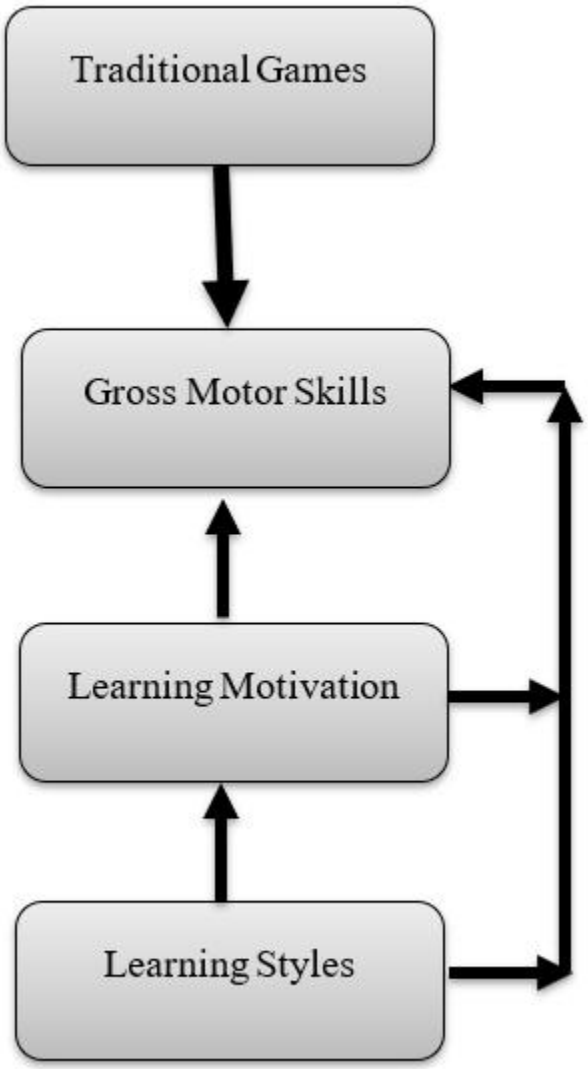

Fig: Visual and Conceptual Model

Cultural and Contextual Justification

In many Asian contexts, traditional games are a cultural artefact that supports children's holistic development (Makhdum et al., 2023). Even though these games offer a wealth of chances for social, cognitive, and physical development, official curricula usually ignore them. Traditional games like Boy-boyan and Dampu help kids in Pakistan and Indonesia preserve their cultural heritage while also improving their motor skills and physical fitness (Rahayu & Ismet, 2021). This study directly examines how the "Boy-boyan" game affects kindergarteners' motor development and finds a strong positive correlation (Rahayu & Ismet, 2021). Because they are inexpensive, require little equipment, and promote peer interaction, these games make an excellent pedagogical tool in educational settings with limited resources.

LIMITATIONS AND DELIMITATIONS

The results of this study are limited by a number of factors. First off, the results' generalisability was impacted by the sample size's small size and geographic restriction to a single district. Second, because the study only lasted four weeks, it might not have captured long-term developmental effects. Delimitations include analysing gross motor skills without taking fine motor development into account and concentrating solely on two classic games. Furthermore, only visual and kinaesthetic learning styles were considered, leaving out auditory learners. The limitations of this study are that it only looked at a small group of people and that the intervention didn't last very long. Future studies should look into the long-term effects and repeat the results in different places (Faisal, et al., 2023). Looking into how gender and socioeconomic status affect things could give us more information.

RESEARCH METHODOLOGY

This research used a quantitative approach with a 2×2×2 factorial design for the experiment. The intervention lasted for two months and included 16 planned sessions. The people we wanted to reach were all Group B kindergarten students in Banten Province who were in school during the 2016 and 2017 school years. Using multistage random sampling (Fitriani et al., 2019), 60 students were chosen from Adina Kindergarten and Al-Muhajirin Kindergarten.

Structured questionnaires were used to collect data, and all of them were checked for validity and reliability before they were used. We used 18 items to test gross motor skills, and the results were very consistent (Cronbach's $\alpha = 0.876$) (Marlina & Hasanah, 2018). A 16-item tool (Cronbach's $\alpha = 0.920$) was used to measure learning motivation, and a 15-item tool (Cronbach's $\alpha = 0.821$) was used to measure learning styles. Both tools showed good psychometric properties (Azis & Saputra, 2021; Wahyuni & Purwanta, 2020). A two-tailed Analysis of Variance (ANOVA) was employed to look at the main and interaction effects of the independent variables; traditional games, learning motivation, and learning styles, on the dependent variable, which was gross motor skill development (Nuryadi & Wulandari, 2022).

The study used a quasi-experimental design and focused on kids in kindergarten. The sample was made up of students who were put into groups based on how much they had played traditional games (Boy-boyan and Dampu), how motivated they were to learn (high/low), and how they learnt (kinesthetic/visual). We used a standardised motor development checklist to do structured observations of the children's gross motor skills. We used ANOVA to look at the data and find the main and interaction effects between the variables. Before collecting data, ethical approval and parental consent were both obtained.

Although experimental results and ANOVA analysis are mentioned in the original study, more details are required. A more thorough description of the research design would be beneficial to the study. Pre- and post-tests were used in a quasi-experimental design. Purposive sampling was used to choose participants from early childhood education facilities. Children between the ages of 4 and 6 who did not have any physical disabilities met the inclusion criteria. The institutional review board granted ethical clearance, and parental consent was obtained.

For four weeks, two traditional games boy-boyan and Dampu were systematically implemented twice a week as part of treatment sessions. Pilot testing was used to determine the instruments' reliability (Cronbach's Alpha > 0.80). A standardised motor assessment tool for young children that has been validated in previous research was used to evaluate the gross motor skills (Figueroa & An, 2017).

RESEARCH FINDINGS

The scores from the experiments showed how well the participants did with their gross motor skills. Before being analysed, the data were put through normality and homogeneity tests. Both tests showed that the data met the assumptions needed for more statistical analysis. Table 1 shows descriptive statistics that summarise the gross motor skill scores for each group that got treatment.

Table 1. Descriptive Statistics for Each Cell Based on 2x2x2 Factorial Design

Descriptive Statistics	Traditional Games (A)	Learning Motivation (B)	Learning Styles (C)
Lowest Score	Boy-boyan (A1)	High Motivation (B1)	Kinesthetic Style (C1)
Highest Score	Dampu (A2)	Low Motivation (B2)	Visual Style (C2)
Average Score	Boy-boyan (A1)	High Motivation (B1)	Kinesthetic Style (C1)
Score Variation	Dampu (A2)	Low Motivation (B2)	Visual Style (C2)
Lowest Score	Boy-boyan (A1)	High Motivation (B1)	Kinesthetic Style (C1)
Highest Score	Dampu (A2)	Low Motivation (B2)	Visual Style (C2)
Average Score	Boy-boyan (A1)	High Motivation (B1)	Kinesthetic Style (C1)

The descriptive analysis of mean scores shows that Boy-boyan had a higher average gross motor skill score (M = 44.37) than Dampu (M = 41.83) among traditional games. In terms of how learning motivation affects performance, kids with high motivation did better on gross motor tasks (M = 46.23) than kids with low motivation (M = 39.97). In the same way, kids who preferred to learn by doing things (M = 45.15) did better than kids who preferred to learn by seeing things (M = 40.42). As shown in Table 2, these results were used to test more hypotheses using an analysis of variance (ANOVA).

Table 2. ANOVA Results

Source of Variation	SS	df	MS	F-cal	F-tab (0.05)	F-tab (0.01)
Between Groups	75.131	1	75.131	10.525	4.027	7.149
Main Effect of Learning Motivation (Inter-B)	419.093	1	419.093	58.713	4.027	7.149
Main Effect of Learning Style (Inter-C)	161.126	1	161.126	22.573	4.027	7.149
Interaction: Game Type × Motivation (A x B)	4.778	1	4.778	0.669 ns	4.027	7.149
Interaction: Game Type ×	113.311	1	113.311	15.874	4.027	7.149

Learning Style (A x C)						
Interaction: Motivation × Learning Style (B x C)	45.476	1	45.476	6.371	4.027	7.149
Interaction: Game Type × Motivation × Style (A x B x C)	14.552	1	14.552	2.039 ns	4.027	7.149
Within Groups (Error)	371.178	52	7.138			
Total	112.779	60				

ANALYSIS AND INTERPRETATION

The analysis of variance (ANOVA) showed that there were a number of statistically significant connections between the variables that were looked at. First, it was found that traditional games had a big effect on children's gross motor skills because the calculated F-value (10.525) was higher than the critical value ($F = 7.149$, $p < .01$). So, the null hypothesis was thrown out, which means that playing traditional games does help kids develop their gross motor skills in early childhood.

Second, learning motivation had a big effect on gross motor performance as well. The F-value of 58.713 was much higher than the F-critical value, so the null hypothesis was not accepted. This means that children are more likely to be physically active if they have higher levels of intrinsic or extrinsic motivation. This, in turn, helps them develop their gross motor skills (Ryan & Deci, 2020; Schunk et al., 2021).

Third, learning styles had a big effect, with an F-value of 22.573, which was again above the threshold. This finding suggests that kids learn best when they use kinaesthetic methods, which can help them do better in physical activities. This is in line with recent research that shows how effective kinaesthetic strategies are for teaching motor skills to young children (O'Brien & Burnett, 2017). The interaction between traditional games and learning motivation, on the other hand, did not have a big effect ($F = 0.669 < Fcrit = 4.027$), which means that these two factors did not work together to help people learn motor skills. The three-way interaction between traditional games, learning motivation, and learning styles was also not statistically significant ($F = 2.039$), which means that their combined effect doesn't add any benefits to those of individual or paired interactions.

On the other hand, the interaction between traditional games and learning styles was significant ($F = 15.874$), which means that traditional games work better for some kids than others. Also, the relationship between learning motivation and learning styles was significant ($F = 6.371$), which shows how important it is to think about both cognitive and motivational factors when planning interventions for gross motor skills. These results show how complicated motor development is in young children and how important it is to use a variety of teaching methods. Interventions that include play-based learning, fit with how kids like to learn, and encourage them to learn are more

likely to lead to measurable improvements in physical development outcomes (Gagen & Getchell, 2021; Palmer et al., 2018).

RESULTS

Descriptive statistics showed that the average scores for kids in Boy-boyan were higher than those for kids in Dampu. Kids who were very motivated to learn and who learnt best by doing things with their bodies also did much better on gross motor tests.

The ANOVA results showed that all three independent variables had a big effect on gross motor skills. There were significant interactions between learning styles and traditional games, as well as between learning styles and learning motivation.

DISCUSSION

The results of this study show that traditional games are very good for kids' gross motor skills. Boy-boyan had a bigger positive effect on gross motor development than Dampu did among the traditional games that were looked at. This means that Boy-boyan gets people to move around more, which is good for improving gross motor skills. Play is an important part of a child's environment for growth, especially in the early years. Playing physical games naturally helps kids develop their gross motor skills because they have to move their bodies in a coordinated way. Traditional games, like those in Indonesia, require activities like running, throwing, and jumping, which are good for motor development. Ferraz et al. (2021) say that traditional games help kids stay fit and also help them learn about other cultures and make friends.

The results show that adding traditional games to early education programs is a good idea. Boy-boyan has a lot of moving and working together parts that help with a lot of gross motor activities (Ismail & Rahmadani, 2020). Motivating kids to learn makes them more likely to do physically demanding tasks, which speeds up their motor development (Ryan & Deci, 2020). These kinds of settings are especially good for kinaesthetic learners because they combine learning with physical activity.

Gagen & Getchell, (2021) assert that boy-boyan helps kids develop strategic thinking and cooperation, which are skills that are important in many areas of intelligence, such as kinaesthetic, cognitive, and interpersonal. These qualities make traditional games not only important for culture but also good for development. Structured physical activities built into these games also help young kids' physical health, morale, and self-esteem (Ryan & Deci, 2020).

The study also makes it clear that there is a strong link between learning motivation and getting better at gross motor skills. Compared to kids with lower motivation levels, kids with higher motivation levels did better on gross motor tasks. Learning motivation is a big part of engagement because it makes kids want to explore and practise their motor skills over and over again. Children who are highly motivated can keep doing physically difficult tasks, which builds their strength, coordination, and confidence (Ferraz, et al., 2021). Children who are highly motivated to learn are usually more focused and determined, which are both important for developing skills. Children who are motivated are more likely to start activities on their own, ask questions, and try new things with their bodies. All of these behaviours help with gross motor development (Rahman & Sukmawati, 2019).

The study also stresses how learning styles affect the development of gross motor skills. Kinaesthetic learners, who learn best through movement, did better on gross motor skill tests than

visual learners. Kinaesthetic learning naturally involves moving your body, which makes it easier to improve your motor skills (Andriani, 2012). On the other hand, visual learners, who like to passively watch, may not get enough exercise to help their gross motor skills grow.

Kinaesthetic learners usually do best in places where they can move around, interact with others, and touch things. They learn by doing things directly, which is a great way to learn the repetitive and physical tasks that help with motor development. On the other hand, structured visual-motor integration exercises might help visual learners improve their gross motor skills (Fauzi, et al., 2023). This study examines the positive effects of traditional games, including "Boy-boyan," on the fundamental motor skills of elementary school students.

Overall, the results of this study show how important it is to use culturally appropriate traditional games, motivational strategies, and different ways of teaching based on how students learn best to help young children develop their gross motor skills.

CONCLUSION

This study comes to the conclusion that three main factors which are participation in traditional games, learning motivation levels, and individual learning styles that have a significant impact on children's gross motor skills. When it came to improving gross motor skills, Boy-boyan outperformed Dampu among the traditional games. Children with a kinaesthetic learning style and high learning motivation also performed better in gross motor exercises (Yılmaz & Ceylan, 2022).

Significant interaction effects between learning motivation and learning styles, as well as between traditional games and learning styles, were also found by the analysis. These interactions suggest that matching play-based strategies to students' motivational and learning style profiles can greatly improve the development of gross motor skills in early childhood. Based on the type of traditional game played, the level of learning motivation, and the dominant learning style, there are statistically significant differences in how children's gross motor skills develop. The Boy-boyan game, a high level of motivation to learn, and a kinaesthetic learning style worked best. Traditional games should be a part of education, but only if they take apologetic, please and motivational factors into account.

Gross motor development must thus be acknowledged as a fundamental aspect of early childhood education. Balanced and comprehensive development can result from incorporating traditional games into the curriculum while taking into consideration the individual differences of each student (Yılmaz & Ceylan, 2022).

Implications for practice

The results highlight how traditional games can help children develop their gross motor skills. Families and educational institutions both have important roles to play in promoting these games. In order to guarantee that physical development is given the same priority as cognitive growth in the early years, teachers in particular should be made aware of the developmental advantages of integrating traditional games like Boy-boyan into everyday activities (Cattuzzo et al., 2020).

• **For teachers**: Make sure to include traditional games in your weekly plans. Make activities fit the way each child learns best.

• **For Parents:** Encourage your kids to play outside, especially games that are based on cultural traditions (Andriani, 2012).

• **For policymakers**: Create training programs for early childhood teachers to use physical activities that are relevant to their culture (Andriani, 2012).

RECOMMENDATIONS

- **For kindergarten teachers:** At least once or twice a week, include structured traditional games like Dampu and Boy-boyan in class activities. Through play that is culturally embedded, these games not only improve fitness but also promote gross motor development (Logan et al., 2018).
- **For Parents**: Promote the use of classic games at home, particularly on the weekends or after school. To encourage enjoyment and long-term engagement, choose games that are appropriate for the child's physical capabilities (Ferraz, et al., 2021).
- **For Policymakers and Educational Leaders:** Train early childhood educators in the integration of traditional games into physical education and offer workshops for their professional development (Makhdum & Faisal et al., 2022). To encourage wider adoption, highlight their benefits in national early childhood education guidelines.

By adopting these techniques, traditional play can be reframed as an essential teaching tool for improving gross motor skills, which will support a more inclusive and balanced model of child development.

FUTURE RESEARCH DIRECTIONS

To evaluate the long-term effects of traditional games on kids' motor development, future research should use a longitudinal design. External validity will also be improved by broadening the study to include more varied traditional games from various cultural contexts. Additionally, combining mixed-methods approaches can yield qualitative information about kids' motivation and behavioural engagement during play. Richer results could also be obtained by examining the role of gender differences and parental involvement.

RELEVANCE TO SDGS AND POLICY IMPLICATIONS

This study aligns with Sustainable Development Goal 4 (Quality Education) and Goal 3 (Good Health and Well-being). It says that early childhood education should include culturally appropriate physical activities to help children grow in all areas. Policymakers and people who make the curriculum should understand how important it is to include traditional games in national curricula. Teacher training programs need to be updated to include lessons on physical literacy and culturally relevant ways of teaching.

REFERENCES

Abbas, Q., Faisal, F., Jabeen Bhutta, M., Salim, Z., & Kanwal, S. (2024). The Role of Quality Teaching of University Teachers in the Motivation of University Students. Journal of Social Sciences Research & Policy, 2(3), 161 – 169. Retrieved from https://jssrp.org.pk/index.php/jssrp/article/view/95

Andriani, S. (2012). The urgency of preserving local cultural values through traditional games. Jurnal Pembangunan Pendidikan, 1(2), 162-171.

Azis, A., & Saputra, R. (2021). The influence of learning motivation on gross motor skills in early childhood. International Journal of Educational Research Review, 6(2), 157–165.

Cattuzzo, M. T., dos Santos Henrique, R., Ré, A. H. N., de Oliveira, I. S., Melo, B. M., de Sousa Moura, M., ... & Stodden, D. F. (2020). Motor competence and health-related physical fitness in

youth: A systematic review. Journal of Science and Medicine in Sport, 23(4), 366–374. https://doi.org/10.1016/j.jsams.2019.10.003

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227–268.

Faisal, A., Ahmed, S.E., Makhdum, M., Makhdum, F.N. (2023). A Comparative Study of Predictive Supervised-machine Learning Algorithms on Cardiovascular Diseases (cvd). *Journal of Population Therapeutics and Clinical Pharmacology,* 30(19), 1159-1177. https://doi.org/10.53555/jptcp.v30i19.3661

Fauzi, R. A., Suherman, A., Saptani, E., Dinangsit, D., & Rahman, A. A. (2023). The impact of traditional games on fundamental motor skills and participation in elementary school students. International Journal of Human Movement and Sports Sciences, 11(6), 1368–1375. https://doi.org/10.13189/saj.2023.110622

Ferraz, R., Branquinho, L., Pereira, M. (2021). Intrinsic and Extrinsic Motivation in Physical Education Class and the Differences between Two Educational Pathways. International Journal of Physical Education Fitness and Sports. 10(3) (2021), 68-83. DOI: 10.34256/ijpefs2138.

Figueroa, R., & An, R. (2017). Motor skill competence and physical activity in preschoolers: A review. Maternal and Child Health Journal, 21(1), 136–146.

Fisher, A., Reilly, J. J., Kelly, L. A., Montgomery, C., Williamson, A., & Paton, J. Y. (2020). Fundamental movement skills and physical activity among children living in deprived areas. International Journal of Behavioral Nutrition and Physical Activity, 17(1), 30. https://doi.org/10.1186/s12966-020-00939-0

Fisher, A., Reilly, J. J., Kelly, L. A., Montgomery, C., Williamson, A., & Paton, J. Y. (2020). Fundamental movement skills and physical activity among children living in deprived areas. International Journal of Behavioral Nutrition and Physical Activity, 17(1), 30. https://doi.org/10.1186/s12966-020-00939-0

Fitriani, Y., Mustadi, A., & Sugiman. (2019). Traditional games and their impact on children's motor skills development: A case study in early childhood education. International Journal of Instruction, 12(4), 607–622. https://doi.org/10.29333/iji.2019.12439a

Gagen, L. M., & Getchell, N. (2021). Motor development and movement skill acquisition: A lifespan perspective. Routledge. https://doi.org/10.4324/9780367820352

Gubbels, J. S., van Kann, D. H. H., & Jansen, M. W. J. (2018). Physical activity, sedentary behavior, and dietary patterns among children. Journal of Nutrition Education and Behavior, 50(6), 652–666. https://doi.org/10.1016/j.jneb.2017.12.011

Gubbels, J. S., van Kann, D. H. H., & Jansen, M. W. J. (2018). Physical activity, sedentary behavior, and dietary patterns among children. Journal of Nutrition Education and Behavior, 50(6), 652–666. https://doi.org/10.1016/j.jneb.2017.12.011

Jung, J., & McMullen, J. M. (2022). Developmentally appropriate practices and preschoolers' gross motor development: A focus on teacher strategies. Early Childhood Education Journal, 50, 89–102. https://doi.org/10.1007/s10643-020-01129-2

Logan, S. W., Webster, E. K., Getchell, N., Pfeiffer, K. A., & Robinson, L. E. (2018). Relationship between motor competence and physical activity: A meta-analysis. Research Quarterly for Exercise and Sport, 86(3), 183–194. https://doi.org/10.1080/02701367.2015.1066337

Makhdum, F.N., Elahi, K., Faisal, F., Tariq, S., (2022). A paradigm shift of learning innovative leadership in classrooms of Pakistan. Psychology and Education (2022) 59(2): 1001-1019.

Makhdum, F.N., Khanam, A. & Batool, T. (2023). Development of a Practice Based Post-Humanistic Model of Smart Education for Sustainable Development (SESD) in Mathematics at Elementary Level in Pakistan. (PhD Country Director Number: 31367) [Doctoral Thesis, Retrieved August 29, 2024, from the department of STEM Education, Lahore College for Women University Lahore Pakistan].

Marlina, L., & Hasanah, R. (2018). Reliability and validity of educational instruments in early childhood motor development research. Asian Journal of Education and Social Studies, 3(2), 25–32.

Mavilidi, M. F., Okely, A. D., Chandler, P., Cliff, D. P., & Paas, F. (2018). Effects of integrated physical exercises and gestures on preschool children's foreign language vocabulary learning. Educational Psychology Review, 30(1), 299–311. https://doi.org/10.1007/s10648-017-9410-5

Novak, J., & Smith, M. (2020). Enhancing student motivation through experiential learning. Educational Psychology Review, 32(2), 307–328. https://doi.org/10.1007/s10648-019-09499-1

Novak, J., & Smith, M. (2020). Enhancing student motivation through experiential learning. Educational Psychology Review, 32(2), 307–328. https://doi.org/10.100.7/s10648-019-09499-1

Nuryadi, N., & Wulandari, H. (2022). The effectiveness of kinesthetic learning in improving motor skills of kindergarten students. Childhood Education Journal, 14(2), 130–140.

O'Brien, L. M., & Burnett, C. (2017). Exploring the role of kinesthetic learning in early childhood: Practical implications for educators. Early Child Development and Care, 189(10), 1687–1702. https://doi.org/10.1080/03004430.2017.1406223

Palmer, K. K., Matsuyama, A. L., & Robinson, L. E. (2018). Associations between fundamental motor skill competence and physical activity in preschool children. Journal of Science and Medicine in Sport, 21(8), 817–821. https://doi.org/10.1016/j.jsams.2017.12.014

Pellegrini, A. D., & Bohn, C. M. (2019). The Role of Recess in Children's Cognitive Performance and School Adjustment. Educational Researcher, 48(1), 20–28. https://doi.org/10.3102/0013189X18821122

Pellegrini, A. D., & Bohn, C. M. (2019). The role of recess in children's cognitive performance and school adjustment. Educational Researcher, 48(1), 20–28. https://doi.org/10.3102/0013189X18821122

Pellegrini, A. D., & Bohn-Gettler, C. M. (2019). The role of play in human development. Oxford University Press.

Pereira, A., Araújo, R., Silva, C., & Monteiro, A. (2020). Physical literacy in early childhood education settings: Perspectives from practitioners. Journal of Physical Education and Sport, 20(4), 1865–1871. https://doi.org/10.7752/jpes.2020.04251

Rahayu, L. D., & Ismet, I. (2021). The influence of traditional boy-boyan games on children's motor development in kindergarten. Early Childhood Education Journal, 10(1), 12-21.

Rahim, A. A., & Junaidi, R. (2017). The effect of traditional games, learning motivation and learning style on childhood's gross motor skill. International Journal of Education and Research, 5(7), 57-68.

Rahman, A., & Sukmawati, D. (2019). Learning motivation and motor skill development: A correlational study in kindergarten settings. Journal of Childhood Development Studies, 6(1), 78–86.

Robinson, L. E., Stodden, D. F., Barnett, L. M., Lopes, V. P., Logan, S. W., Rodrigues, L. P., & D'Hondt, E. (2019). Motor competence and its effect on positive developmental trajectories of health. Sports Medicine, 49(9), 1377–1384. https://doi.org/10.1007/s40279-019-01061-2

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivations: Classic definitions and new directions. Contemporary Educational Psychology, 61, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivations: Classic definitions and new directions. Contemporary Educational Psychology, 61, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Ryan, R. M., & Deci, E. L. (2020). Intrinsic motivation and self-determination in human behavior. Springer. https://doi.org/10.1007/978-1-4899-2271-7

Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2021). Motivation in education: Theory, research, and applications (5th ed.). Pearson.

Smith, R. A., & Kolb, D. A. (2017). Learning styles and physical activity engagement in early childhood. Early Child Development and Care, 189(4), 556–568. https://doi.org/10.1080/03004430.2017.1337591
Smith, R. A., & Kolb, D. A. (2017). Learning styles and physical activity engagement in early childhood. Early Child Development and Care, 189(4), 556–568. https://doi.org/10.1080/03004430.2017.1337591
UNESCO. (2021). Reimagining our futures together: A new social contract for education. Paris: UNESCO Publishing.
Wahyuni, S., & Purwanta, E. (2020). Learning styles and motor development in preschool education. Journal of Early Childhood Education Research, 9(1), 1–12.
Whitebread, D., Pino-Pasternak, D., & Coltman, P. (2019). Self-regulation in young children: Developing the foundation for lifelong learning. British Educational Research Journal, 45(2), 217–238. https://doi.org/10.1002/berj.3505
Whitebread, D., Pino-Pasternak, D., & Coltman, P. (2019). Self-regulation in young children: Developing the foundation for lifelong learning. British Educational Research Journal, 45(2), 217–238. https://doi.org/10.1002/berj.3505
Yılmaz, A., & Ceylan, A. (2022). The effect of traditional children's games on the development of gross motor skills in preschool children. Early Child Development and Care, 192(12), 1910–1922. https://doi.org/10.1080/03004430.2020.1813121
Zeng, N., Johnson, S. L., Boles, R. E., & Bellows, L. L. (2022). Effects of physical activity on motor skills and cognitive development in early childhood: A systematic review. Early Childhood Research Quarterly, 59, 30–42.
Zhao, Y., Olivera, L., & Edmondson, C. (2019). Learning motivation in early childhood: Building the foundations for lifelong learning. Early Child Development and Care, 191(3), 332-344
Zhao, Y., Olivera, M., & Edmondson, C. (2019). Motivation in early childhood education. Early Child Development and Care, 191(3), 332–344. https://doi.org/10.1080/03004430.2019.1637837
Zhao, Y., Olivera, M., & Edmondson, C. (2021). Motivation in early childhood education. Early Child Development and Care, 191(3), 332–344. https://doi.org/10.1080/03004430.2019.1637837