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The Role of Athletic Activities in Early Childhood Development: An Evidence Based Literature

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Abstract

This study examines the contribution of athletic activities to early childhood development through a literature review of 20 peer reviewed scientific articles published between 2018 and 2025. Articles were retrieved from reputable national and international databases including Google Scholar SINTA DOAJ and ScienceDirect and selected through a structured screening process based on predefined inclusion and exclusion criteria. Data were analyzed using a thematic analysis approach to identify key developmental outcomes. The findings indicate that structured and game based athletic activities effectively enhance muscle strength motor coordination balance self confidence and social skills in early childhood. Game based athletic learning was consistently found to be more effective than formal instructional approaches in supporting both physical and psychosocial development. This review highlights the importance of integrating athletic activities into early childhood physical education through developmentally appropriate and adaptive learning designs and provides practical recommendations for educators to implement game based athletic learning strategies.

Keywords: Athletic Activities; Early Childhood; Motor Development; Game Based Learning; Physical Education

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1. INTRODUCTION

Early childhood (EC) is recognized as the most fundamental phase in the human developmental cycle, commonly referred to as the *golden age*. During this period, rapid growth and maturation of brain structures and neuromuscular systems occur at a very high intensity. Each learning experience contributes to the formation of neural pathways that influence cognitive, motor, social, and emotional development in later life. Therefore, early childhood education (ECE) functions not merely as a caregiving process, but as a structured and systematic effort to optimize children's overall developmental potential through appropriate, planned, and continuous stimulation (Suryana et al., 2022).

One crucial developmental domain influencing children's readiness to learn is gross motor development (Wati, 2025). Fundamental movement skills such as locomotor, non-locomotor, and manipulative movements form the foundation for children's participation in academic and social activities at school. Children with well-developed motor coordination tend to show higher learning readiness, greater social engagement, and stronger self-confidence than those experiencing motor delays. Hence, physical activity should be viewed as an essential component of early childhood education rather than a complementary or optional activity.

In this context, athletics for early childhood refers to developmentally appropriate physical activities that emphasize basic movement patterns such as running, jumping, throwing, balancing, and coordination through play-based and exploratory approaches. This concept differs from *athletics* as commonly understood in international contexts, which often refers to competitive *track and field* sports. Athletics in early childhood education focuses on playful movement experiences tailored to children's physical and psychological characteristics, rather than performance, competition, or standardized techniques.

Athletic-based movement activities provide comprehensive physical stimulation by integrating components of strength, speed, flexibility, balance, and endurance. When these activities are delivered through games and enjoyable learning experiences, children's motivation to move increases, boredom is reduced, and learning becomes more meaningful. Such movement-based learning supports children's body awareness, movement control, and kinesthetic development, which are essential foundations for later physical competence.

Empirical studies have demonstrated that children who regularly engage in structured physical activities

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exhibit better levels of physical fitness, including cardiorespiratory endurance, muscular strength, and movement coordination (Sudarmanto et al., 2025). Adequate physical fitness contributes not only to physical health but also to improved concentration, emotional regulation, and learning endurance. Physically active children tend to be more resilient in classroom participation and less susceptible to health-related disruptions to school attendance.

Beyond physical benefits, athletic activities also play an important role in psychosocial development. Through movement-based group activities, children learn essential social skills such as cooperation, turn-taking, rule-following, and emotional control when facing success or failure. Physical activity–based learning has been shown to positively influence children's self-confidence and character development (Andriansyah et al., 2025). Moreover, interactions during athletic play foster empathy, communication skills, and respect for diversity among peers.

Athletic activities further support cognitive development by engaging higher-order cognitive processes, including decision-making, problem-solving, and spatial awareness. Coordinated movement requires children to understand direction, timing, and body positioning, thereby strengthening cognitive functions through experiential learning. Consequently, athletics for early childhood contributes holistically to physical, cognitive, and socio-emotional development.

Despite these well-documented benefits, the implementation of structured athletic activities within early childhood education settings remains limited. In many ECE institutions, physical activities are still incidental, unstructured, and insufficiently integrated into learning plans based on developmental principles. Contributing factors include limited teacher competence in designing developmentally appropriate physical activities, inadequate facilities, and the absence of practical curriculum guidelines for early childhood athletic learning (Salsabila et al., 2025).

Another critical issue is the lack of standardized and easily applicable athletic learning models for early childhood education. Many educators rely heavily on personal creativity without sufficient theoretical grounding, which may result in activities that do not optimally achieve developmental objectives. Additionally, existing scientific studies on early childhood athletic activities are scattered across various publications, with limited synthesis available to serve as a comprehensive reference for practitioners.

Based on these conditions, a scientific study is needed to integrate existing research findings on athletics for early childhood into a systematic analytical framework. This article aims to synthesize evidence from 20 verified scientific studies examining the effects of athletic-based activities on motor development, physical fitness, and psychosocial aspects of early childhood. The findings are expected to contribute academically to the advancement of early childhood physical education research and practically to the development of effective athletic learning programs in ECE settings.

Furthermore, this synthesis is intended to provide a foundation for curriculum development, enhancement of teacher competencies, and implementation of athletic learning programs aligned with children's developmental characteristics. Ultimately, this study is expected to support sustainable improvements in the quality of early childhood education, particularly in the Indonesian context.

2. RESEARCH METHOD

This study employed a literature review method with a qualitative descriptive approach. This approach was chosen to provide a comprehensive understanding of the contributions of athletics-based activities to early childhood development (ECD) by analyzing various relevant studies. A literature review allows for the integration of empirical findings and theoretical perspectives, producing a robust academic synthesis.

Research Design

Data sources consisted of scientific articles published in SINTA 2–5 indexed national journals and DOAJ or Scopus indexed international journals. Searches were conducted via Google Scholar, SINTA, GARUDA, DOAJ, and ScienceDirect from January 2023 to August 2025. Keywords included: *athletics, early childhood development, fundamental movement skills, motor development, physical literacy, preschool physical activity*. In addition, scientific books and physical education policy documents were included as supporting sources.

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Data Sources and Information Collection Techniques

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Literature Selection Technique

The article selection followed a PRISMA-inspired procedure: (1) Identification – A total of 183 articles were initially retrieved through keyword searches; (2) Screening – Titles and abstracts were assessed for relevance, leaving 102 articles; (3) Eligibility – Full-text articles were evaluated for methodological rigor, empirical quality, and theoretical contribution. After applying inclusion and exclusion criteria, 20 articles were selected for synthesis.

Quality Assessment: Each eligible article was critically appraised using standardized evaluation tools such as CASP (Critical Appraisal Skills Programme) for qualitative studies and MMAT (Mixed Methods Appraisal Tool) for quantitative or mixed-method studies, ensuring methodological robustness.

Inclusion Criteria: (1) Published between 2018–2025; (2) Focused on athletics-based activities, fundamental movements, or preschool physical activity; (3) Full-text available for detailed analysis; (4) Published in reputable national or international journals; (5) Contained empirical data, models, or practical recommendations.

Exclusion Criteria: (1) Opinion or commentary articles without empirical or methodological basis; (2) Articles lacking relevant empirical data or theoretical contribution; (3) Research conducted on populations other than early childhood.

Data Analysis Technique

Data were analyzed thematically through the following steps: (1) **Data reduction**: Identifying key developmental domains: physical, motor, social, and cognitive/psychological; (2) **Categorization**: Grouping findings according to similar developmental themes; (3) **Comparative synthesis**; Comparing outcomes across studies to identify patterns, trends, and differences; (4) **Theoretical interpretation**: Linking findings to child development theories, motor learning principles, and sports pedagogy; (5) **Conclusion drawing**; Formulating the contribution of athletics-based activities and developing recommendations for implementation in early childhood education programs.

This structured approach ensures the literature review is transparent, systematic, and methodologically sound, providing a strong foundation for evidence-based recommendations.

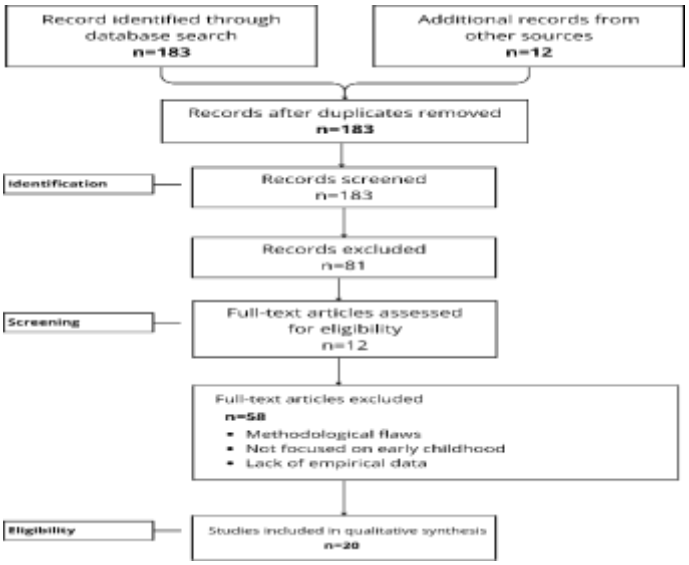

Figure 1. PRISMA Flow Diagram

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Description:

Identification: 183 articles found + 12 additional from other sources
Screening: 102 articles relevant after title & abstract review
Eligibility: 50 full-text articles assessed; 30 excluded due to methodological flaws or population other than early childhood
Included: 20 articles synthesized for qualitative analysis

3. RESULTS AND DISCUSSION

Results

The analysis of 20 selected scientific articles demonstrates that athletics-based activities make a substantial contribution to physical, motor, social, and psychosocial development in early childhood. The findings consistently indicate that athletics for early childhood—implemented through play-based and developmentally appropriate approaches—supports holistic child development.

Physical Development

Athletic activities play an important role in improving physical fitness, including cardiorespiratory capacity, muscle strength, and agility in early childhood. Activities such as running and jumping contribute to enhancing the body's ability to utilize oxygen efficiently. In addition, repetitive exercises presented in the form of athletic games have been shown to improve endurance and speed through enjoyable and structured movement experiences.

Motor Development

Game-based athletic activities provide a significant contribution to the improvement of fundamental movement skills, coordination, balance, and movement control in early childhood. Harliawan,Imam Suyudi, Andi Ridwan & Awaluddin (2024) reported an improvement of up to 30% in fundamental movement skills following participation in an eight-week athletics program. Manipulative movements such as throwing and catching were also found to enhance hand–eye coordination and movement accuracy.

Social and Psychosocial Development

Group-based athletic activities help children develop cooperation skills, understand rules, enhance self-confidence, and regulate emotions. Hamdi,Salabi, Taufik & Naimatul Jamaliah (2025) demonstrated that athletic games significantly improved social interaction among children.

Tabel 1. Summary of Related Reseacrh Findings

Researcher	Year	Focus	Main Findings
Faizah, Sumaryanti, Sulistiyono, Alim	(2024)	Physical activity and gross motor skills in early childhood	Physical activity significantly aids gross motor development.
Aulia & Pratama	(2025)	Learning methods through sports for children's motor skills	Sports improve coordination, balance, and learning motivation
Awla & Pratama	(2025)	Physical fitness and motor skills	Sports programs support gross, fine, and emotional motor development.
Divanca, Nurani & Hikmah	(2024)	Creative gymnastics for early childhood	Gymnastics enhances basic movement skills, coordination, and social interaction
Riyanto, Fitrianti & Mahuze	(2023)	Outdoor learning for children's motor skills	Outdoor games improve gross motor skills and creativity
Arridho	(2020)	Early childhood movement learning models	Structured movement learning supports children's motor and physical development

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Researcher	Year	Focus	Main Findings
Harahap, Prastiyo, Sinaga, Agmarani	(2025)	Movement learning model	Basic movement activities improve coordination, balance, and muscle strength
Vanagosi	(2016)	Basic movement concepts for early childhood	Understanding basic movement is important for children's motor and social development
Yudaparmita	(2022)	Basic movement skills in physical education	Physical activity contributes to improving children's motor skills and fitness
Purwanti	(2025)	Physical activity games for gross motor skills	Physical activity helps gross motor development and coordination skills
Ramdani & Azizah	(2020)	Outdoor games for gross motor skills	Outbound activities improve children's motor skills, fitness, and social cooperation
Widarto, Sugiharto, Supriyadi	(2021)	Play & games with music	Music activities and games improve children's motor coordination and creativity
Rubiyatno	(2023)	Sports and child growth and develompment	Physical activities accelerate children's physical and gross motor development
Sudirjo	(2024)	Active lifestyle interventions through physical activities	Regular physical activity improves motor skills, fitness, and healthy lifestyle patterns
Qibtiyah, Wardiyanto & Kurniawan	(2024)	Kids' Athletics for children aged 4–6 years	Basic athletic skills improve significantly through Kids' Athletics
Studi skripsi UPI	(2023)	Kids Athletics Activities for Children's Motor Skills	Simple athletic exercises improve coordination, balance, and agility
Sudirjo	(2024)	Physical activities for an active lifestyle for children	Physical activities support children's motor, social, development and fitness
Yudaparmita & Vanagosi	(2022)	Basic movement concepts and models	The use of basic movements supports children's motor skills, social interaction, and creativity
Arridho & Harahap dkk	(2020) - (2025)	Basic movement learning model for early childhood education	Movement activities improve coordination, motor skills, and physical fitness
Purwanti & Faizah dkk	(2025)	Physical and gross motor activities	Structured physical activities improve children's motor skills, coordination, and motivation

Discussion

This discussion integrates findings from **20 scientific studies** focusing on the contribution of athletic activities to the **physical, motor, social, and psychosocial development** of early childhood. Overall, the results indicate that athletics-based activities function as a **holistic learning approach** that supports comprehensive child development. These findings are consistent with theories of motor development and early childhood physical education pedagogy.

Contribution of Athletic Activities to Physical Development

Athletic activities stimulate various components of physical fitness, including muscle strength, agility, speed, and endurance. Running, jumping, and throwing involve large muscle groups and require whole-body

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coordination. These activities enhance oxygen utilization efficiency and improve endurance when delivered through repetitive yet enjoyable athletic games.

Strengthening Motor Development through Athletic Activities

Motor development is the aspect most consistently improved through athletic activities. Games involving zig-zag running, low hurdle jumping, and target throwing provide sensorimotor challenges that enhance balance, coordination, and movement control. Harliawan,Imam Suyudi, Andi Ridwan & Awaluddin (2022) reported a significant improvement in fundamental movement skills after an eight week athletic training program.

These findings are supported by Saharullah et al. (2019) , who emphasized that athletic movements serve as a foundation for advanced motor development and later sport-related skills.

Social and Psychosocial Impact of Athletic Activities

Athletic activities contribute not only to physical development but also to social and emotional growth. Group-based athletic learning encourages children to understand rules, share responsibilities, and communicate effectively. Participation in athletic games enhances social interaction, self-confidence, and emotional regulation by enabling children to manage challenges and respond constructively to feedback.

Effectiveness of Game Based Learning Models

Game-based athletic learning is consistently reported as more effective than formal or rigid instructional approaches. Athletic games increase intrinsic motivation by offering enjoyable movement experiences without pressure. This approach allows children to be more physically active, explore their environment freely, and develop creativity through play. In contrast, overly outcome-oriented learning models may reduce engagement and limit movement exploration.

Practical Implications for Early Childhood Education

The findings suggest several practical implications: (1) Athletic activities should be systematically integrated into early childhood curricula based on developmental principles; (2) Teachers require training to implement game-based athletic learning effectively; (3) Simple facilities, such as safe movement areas and child-friendly equipment, are sufficient to support athletic activities; (4) Gradual progression of task difficulty is essential to maintain motivation and avoid pressure.

Limitations of the Review and Directions for Future Research

Most of the analyzed studies were short-term and did not fully capture the long-term effects of athletic activities on early childhood development. In addition, limited comparative research exists on different athletic learning models. Future studies are encouraged to employ longitudinal designs and explore technology-based and individualized approaches to examine sustainable developmental outcomes.

4. CONCLUSION

This literature review confirms that athletics-based activities play a significant and multidimensional role in supporting early childhood development. Analysis of 20 scientific publications demonstrates that basic athletic movements such as running jumping and throwing consistently contribute to improvements in physical fitness fundamental motor skills and social psychosocial development. From a physical perspective athletic activities enhance muscular strength agility cardiorespiratory capacity and endurance while in the motor domain they strengthen coordination balance movement control and manipulative skills. Game based athletic learning emerges as the most effective approach because it provides enjoyable safe and developmentally appropriate experiences that foster movement competence as well as social interaction self confidence and emotional regulation. However this review is limited by the predominance of short term studies variation in intervention models and differences in teacher competence and facility availability across educational settings. Therefore future research should prioritize longitudinal designs comparative evaluations of athletic learning models and investigations across diverse sociocultural contexts to strengthen evidence-based implementation of athletics as an integral component of early childhood education.

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References

Andriansyah, R., Dzaky, M. N., Alwasi, I., Ramadhan, F. A., Zahra, E., Riski, D. M., Bangsa, U. B., Serang, K., Banten, P., Bangsa, U. B., Serang, K., Banten, P., Bangsa, U. B., Serang, K., Banten, P., Bangsa, U. B., Serang, K., Banten, P., Bangsa, U. B., ... Banten, P. (2025). STRATEGI DAN PERAN PENDIDIKAN JASMANI DAN OLAHRAGA DALAM MEMBENTUK KARAKTER ANAK BANGSA Rian. *JURNAL ILMIAH MULTIDISIPLIN ILMU*, *2*(2), 1–6. https://doi.org/https://doi.org/10.69714/fbwfkm98 STRATEGI

Anggareksa, D., & Widarto, S. (2021). *Pengaruh Pembelajaran Play & Games dengan Mendengarkan Musik terhadap Perkembangan Keterampilan Gerak Dasar Motorik Anak*. 779–786.

Arridho, M. F., Abdillah, M., Ma, S., Rahman, M. A., Studi, P., Olahraga, P., & Medan, U. N. (2020). *PERTUMBUHAN DAN PERKEMBANGAN GERAK PADA MODEL PEMBELAJARAN GERAK USIA DINI*. *06*(1), 59–63.

Aulia, V. K., & Pratama, R. S. (2025). *Implementasi Metode Belajar Melalui Olahraga dalam Pengembangan Motorik Anak Usia Dini*. *2*(1).

Awla, I., & Pratama, R. S. (2025). *Pentingnya Kebugaran Jasmani Dalam Pengembangan Keterampilan Motorik Pada Anak Usia Dini : Tinjauan Program Olahraga*. *2*(1).

Divanca, J., & Nurani, Y. (2024). *Senam Kreasi AHARIA untuk Menstimulasi Keterampilan Gerak Dasar Anak Usia Dini*. *2*, 1–7.

Faizah, K., & Alim, A. (2024). *Analysis of physical activity of gross motor movements in early childhood : Systematic literature review*. *20*(1), 31–40.

Hamdi Sandywan, Muhammad Salabi, Kurnia Taufik, N. J. (2025). EFEKTIVITAS METODE ATLETIK ANAK DALAM MENINGKATKAN KEMAMPUAN LOMPAT JAUH PADA SISWA SEKOLAH DASARHamdi Sandywan 1ABCD, Muhammad Salabi2AC, Kurnia Taufik 3AD, Naimatul Jamaliah4ADPendidikan Jasmani, Fakultas Ilmu Keolahragaan dan Kesehatan Masyarakat, Univ. *Journal Physical Education and Outdoor Activity*, *1*(June), 66–85.

Harahap, Prastiyo, Sinaga, A. (2025). Pertumbuhan dan Perkembangan Gerak Pada Model Pembelajaran Gerak Usia Dini. *Jumper: Jurnal Mahasiswa Pendidikan Olahraga*, *6*(1), 209–219.

Meisak, D., Hendri, & Agustini, S. R. (2022). Penerapan Metode Prototype Pada Perancangan Sistem Informasi Penjualan Mediatama Solusindo Jambi. *STORAGE: Jurnal Ilmiah Teknik Dan Ilmu Komputer*, *1*(4), 1–11. https://doi.org/10.55123/storage.v1i4.1066

Ngurah, G., Yudaparmita, A., Tinggi, S., Hindu, A., Mpu, N., & Singaraja, K. (2022). *KETERAMPILAN GERAK DASAR ANAK USIA DINI DALAM MERDEKA BELAJAR*. *3*, 21–30.

Pendidikan, J., Rekreasi, K., Vanagosi, K. D., Studi, P., & Jasmani, P. (2016). *KONSEP GERAK DASAR UNTUK ANAK USIA DINI*. *1*.

Purwanti, A. (2025). Jurnal PENDAKI Vol. 4 (2): 2025. *Jurnal PENDAKI*, *4*(2), 1–10.

Qibtiyah, A. M., Wardiyanto, Y., & Kurniawan, F. F. (2024). *PENGARUH KIDS ' ATHLETICS TERHADAP KETERAMPILAN GERAK DASAR ATLETIK PADA ANAK USIA 4-6 TAHUN The Influence Of Kids ' Athletics on Basic Athletics Movement Skills in*. *4*(1), 51–63.

Ramadhan, A. G. (2023). *MENINGKATKAN KETERAMPILAN GERAK FUNDAMENTAL MELALUI AKTIVITAS KIDS ATLETIK*.

Ramdani, L. A., & Azizah, N. (2020). *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini Permainan Outbound untuk Perkembangan Motorik Kasar Anak Usia Dini Abstrak*. *4*(1), 482–490. https://doi.org/10.31004/obsesi.v4i1.407

Ridwan, A., & Artikel, I. (2024). Implementasi Fundamental Movement Skills (FMS) Pada Anak Usia Sekolah Dasar. *LITERA ABDI: Jurnal Pengabdian Masyarakat*, *2*, 8–16.

ISSN: 2088-0324
e-ISSN: 2685-0125

Riyanto, P., Fitrianti, H., & Mahuze, P. N. (2023). *Peningkatan Keterampilan Gerak Dasar (Motorik) Anak Usia Dini menggunakan Outdoor Learning*. *5*, 89–99.

Rubiyatno. (2023). *Peranan aktivitas olahraga bagi tumbuh kembang anak*. *88*, 54–64.

Saharullah, Wahyudin, & Nawir, N. (2019). *Pembinaan Olahraga Usia Dini (Edisi Revisi)*. Badan Penerbit Universitas Negeri Makassar. http://eprints.unm.ac.id/27083/%0Ahttp://eprints.unm.ac.id/27083/1/PEMBINAAN OLAHRAGA USIA DINI %28edisi Revisi%29.pdf

Salsabila, Z. S., Pratama, R. S., Pendidikan, G., Usia, A., & Semarang, U. N. (2025). Membangun Keterampilan Motorik Kasar Anak Usia Dini Melalui Olahraga. *Jurnal Pendidikan Anak Usia Dini*, *3*, 27–39. https://doi.org/https://doi.org/10.47861/khirani.v2i4.1416

Sudarmanto, E., Sistiasih, V. S., Sakti, S., Jasmani, P., Muhammadiyah, U., & Universitas, P. J. (2025). PENERAPAN KID ' S ATHLETIK SEBAGAI SARANA MENINGKATKAN. *Jurnal Pengabdian Kepada Masyarakat*, *6*(2), 352–358.

Sudirjo, E., & Sudrazat, A. (2024). *Bagaimana Intervensi Gaya Hidup Aktif melalui Aktifitas Fisik pada Anak ? Sebuah Tinjauan Sitematis*. *10*(1), 109–123.

Suryana, E., Hamdani, M. I., Bonita, E., & Harto, K. (2022). The Golden Age : Perkembangan Anak Usia Dini dan Implikasinya Terhadap Pendidikan Islam. *Tarbawiyah Jurnal Ilmiah Pendidikan*, *06*, 218–228. https://doi.org/https://doi.org/10.32332/tarbawiyah.v6i2.5537

Wati, R. (2025). *Analisis Keterampilan Gerak Dasar Lokomotor Siswa Kelas V Di SD Negeri 011 Simalinyang Kabupaten Kampar*. *5*, 214–227. https://doi.org/https://doi.org/10.31004/innovative.v5i3.18970