



# Analysis of the relationship between emotional quotient and physical activities on fundamental motor skills of elementary school

Cahyo Wibowo<sup>1ABCDE</sup>, Dennys Christovel Dese<sup>2ABDE\*</sup>

<sup>1,2</sup> Universitas Kristen Satya, Indonesia

*Authors' Contribution: A – Study Design, B – Data Collection, C – Statistical Analysis, D – Manuscript Preparation, E – Funds Collection*

**Abstract:** The significance of emotional quotients (EQ) and physical activities in developing fundamental motor skills in elementary school students was the primary reason for this study. This study analyzes the relationship between EQ and physical activities with fundamental motor skills among elementary school students aged 7-9. The research method employed observational analytics with a cross-sectional approach. The study population consisted of students from Kurma Islamic Elementary School in Salatiga, with a sample of 80 students aged 7-9. Data were collected through questionnaires (EQ), PAQ-C, and performance-based motor skills assessment rubric. Data analysis was conducted using Pearson correlation and linear regression tests. The results showed a significant relationship between EQ and fundamental motor skills. Additionally, there was a significant relationship between physical activities and fundamental motor skills. Regression analysis indicated that EQ and physical activities significantly influenced fundamental motor skills simultaneously. This study reveals that both EQ and physical activities significantly impact fundamental motor skills in elementary school students. The implications of the findings underscore the significance of integrating holistic education programs, incorporating EQ development, and promoting physical activity to support overall motor development and well-being in children.

**Keywords:** Emotional Quotient; Physical Activity; Fundamental Motor Skills, Elementary School Students

\*Corresponding author: Dennys Christovel Dese, email: [dennys.christovel@uksw.edu](mailto:dennys.christovel@uksw.edu)



## INTRODUCTION

Emotional Quotient (EQ), or emotional intelligence, has become a significant focus of research in psychology and education. EQ encompasses an individual's ability to recognize, understand, and manage their own emotions as well as those of others, which has a broad impact on social interactions, mental well-being, and success in various aspects of life (Farmer et al., 2020; Kochhar & Tripathi, 2022). On the other hand, physical activity has also been recognized for its essential role in child development, not only in terms of physical health but also in cognition, emotions, and social interactions (Bidzan-Bluma & Lipowska, 2018; Doherty & Forés Miravalles, 2019; Veldman et al., 2021). Children who engage in regular physical activities tend to have better physical and mental well-being and enhanced cognitive and social abilities (Biddle et al., 2019).

Furthermore, fundamental motor skills such as balance, locomotor, and manipulative movements are critical to a child's motor development. The ability to perform these fundamental movements proficiently supports healthy physical activity and impacts a child's cognitive, social, and emotional abilities (Kuzik et al., 2020). Therefore, integrating an understanding of EQ and physical activity with the development of fundamental motor skills is essential in the context of primary education.

Although numerous studies have been conducted in the field of child development, there is a significant knowledge gap regarding how EQ and physical activities jointly influence the development of fundamental motor skills in elementary school children. The primary issue is the need for more research that comprehensively integrates these three aspects. Previous studies have focused on one aspect, such as EQ or physical activities, but have yet to explore the relationship between both in conjunction with the development of fundamental motor skills.

This lack of understanding has significant implications, particularly in primary education. Educators and policymakers need a better comprehension of how these factors interact and influence the development of elementary school-aged children. Therefore, research investigating the relationship between EQ, physical activities, and fundamental motor skills in elementary school students will provide valuable contributions to education and child development.

A literature review reveals that several studies have separately examined the roles of Emotional Quotient (EQ) and physical activities in child development. These studies have

highlighted the importance of EQ in children's mental and social well-being and the positive impact of physical activities on physical health and cognition (Borland et al., 2022; Kvalø & Natlandsmyr, 2021). However, although this literature provides a better understanding of each aspect individually, there remains a significant gap in the literature that directly links EQ, physical activity, and fundamental motor skills in elementary school children. Research that integrates these three aspects into a holistic analysis is still limited, leading to a lack of understanding of how the interaction between EQ and physical activities can influence the development of fundamental motor skills in elementary-aged children. Therefore, identifying this gap is a critical foundation for this research, which aims to fill this knowledge void by exploring the complex relationships between EQ, physical activity, and fundamental motor skills in elementary school students.

The primary objective of this study is to investigate the relationship between Emotional Quotient (EQ) and physical activities on the fundamental motor skills of elementary school students aged 7-9 years. This research aims to fill the gap in the existing literature by expanding our understanding of how these factors interact and contribute to the motor development of children in elementary school. This study will precisely measure the EQ levels of elementary students using reliable instruments and evaluate their physical activity levels through observation and objective measurement.

This research offers significant new contributions to education and child sciences by integrating our understanding of elementary school students' EQ, physical activities, and fundamental motor skills. The novelty of this study lies in its comprehensive interdisciplinary approach, which combines psychological, physical, and developmental aspects of children within a single research framework. This research is highly relevant because of the scarcity of studies examining the relationship between EQ, physical activities, and fundamental motor skills. It can significantly enhance our understanding of child development in elementary school-aged children.

The justification for this research is based on the urgent need to develop more holistic and practical educational approaches that comprehensively consider children's emotional, physical, and motor aspects. Thus, this study is expected to serve as a valuable reference for physical education teachers, psychologists, and policymakers in designing more effective educational interventions that support the optimal development of elementary school-aged children.

## **MATERIAL AND METHODS**

### *Research Design*

The research methodology employed in this study is an observational analytic method with a cross-sectional approach. This approach was selected because it allows for observing and analyzing the relationships between the variables at a specific time. Thus, the study can clearly depict the relationship between Emotional Quotient (EQ), physical activities, and fundamental motor skills in elementary school students within a single time frame. The cross-sectional approach also enables the researchers to collect data from many participants simultaneously, efficiently facilitating more accessible analysis and generalization of the research findings

### *Participant*

The population for this study comprises students from Sekolah Dasar Islam Kurma in Salatiga. From this population, the research sample includes students aged 7 to 9 years. The total number of samples taken for this study is 80 elementary school students. The selection of samples aged between 7 and 9 years was conducted to ensure that the data obtained was relevant to the developmental stage of elementary school children being studied. Consequently, the selected sample is expected to represent the general population of Islam Kurma Elementary School Salatiga students, thereby enhancing the generalizability of the research findings.

### *Research Procedure*

The research procedure commenced with data collection using several predetermined measurement instruments. First, participants were asked to complete a questionnaire on Emotional Quotient (EQ) to gather information about their emotional abilities. This EQ questionnaire has been tailored to the characteristics of elementary school students and previously validated. Subsequently, the students were also asked to complete a questionnaire about their physical activity using the Physical Activity Questionnaire for Children (PAQ-C). This questionnaire is designed to measure the student's level of physical activities over a specified period. Following the completion of both questionnaires, the assessment of fundamental locomotor movements was conducted on the students. This assessment was performed by a trained research team using a performance-based rubric for fundamental motor skills. The evaluation was conducted objectively and systematically to ensure accuracy and consistency in measuring the students' locomotor abilities.

### *Research Instrument*

The research instruments utilized in this study encompass three distinct components: the Emotional Quotient (EQ) questionnaire, the Physical Activity Questionnaire for Children (PAQ-C), and a rubric for assessing fundamental locomotor movements. The EQ was measured using a questionnaire specifically adapted to the characteristics of elementary school students. This questionnaire was adapted to ensure its relevance to the research context. Its validity has been previously tested, yielding a validity coefficient of 0.768. Additionally, the reliability of the EQ questionnaire was assessed using Cronbach's alpha coefficient, resulting in a reliability score of 0.788, indicating high validity and reliability.

To measure the level of physical activity, the study employed the Physical Activity Questionnaire for Children (PAQ-C) (Crocker et al., 1997; Kowalski et al., 1997). a widely tested and utilized instrument in physical activity research. Students' fundamental locomotor abilities were assessed using a performance-based rubric designed to evaluate fundamental motor skills (Wibowo et al., 2024). This rubric is intended to objectively and systematically assess basic motor skills, including balance, locomotor, and manipulative movements.

### *Data Analysis Technique*

Data analysis was conducted using statistical techniques appropriate for the research objectives. The Pearson correlation coefficient assessed the correlation between EQ and physical activity variables on motor skills. Subsequently, linear regression analysis was performed to assess the significance of the influence of EQ and physical activity variables on motor skills. An F-test followed the analysis to determine whether EQ and physical activity variables significantly affected motor skills variables. The chosen analytical methods were selected to ensure accurate and statistically accountable results.

## **RESULTS**

The analysis aims to uncover key findings from the collected data and provide an in-depth interpretation of the research results. This study examines the relationship between emotional quotient (EQ) physical activities and locomotor movement. The following table presents the distribution of respondents and the data processing results.

**Table 1.** Emotional Quotient (EQ) frequency distribution

Category	Amount	Percentage
Very poor	0	0%
Poor	11	13,7%
Fair	28	40%
Good	24	30%
Very good	17	21,2%

Table 1 presents the frequency distribution of Emotional Quotient (EQ) among the study participants. From the analysis results, it can be observed that most participants have a moderate level of EQ, accounting for 40% of the total. A good level of EQ follows this, found in 30% of the participants. Meanwhile, an excellent level of EQ comprises 21.2% of the participants. However, a small portion of participants exhibit a poor level of EQ (13.7%), while none fall into the inferior category. This frequency distribution provides an insightful overview of the emotional intelligence levels within the research sample, which can serve as a focal point for further analysis regarding the relationship between EQ and other variables.

**Table 2.** Physical Activity frequency distribution

Category	Amount	Percentage
Very Low	9	11%
Low	43	53%
moderate	11	13%
High	15	18%
Very High	2	2,5%

Table 2 illustrates the frequency distribution of physical activities among the study participants. Data analysis indicates that most participants exhibit a low level of physical activities, accounting for 53% of the total. This is followed by participants with a moderate level of physical activity, reaching 13%. However, a small portion of participants demonstrate a deficient (11%) and very high (2.5%) level of physical activities. Additionally, approximately 18% of participants have a high level of physical activities. This frequency distribution provides a clear overview of the physical activity pattern within the research sample, which is crucial for understanding its relationship with other observed variables.

**Tabel 3.** Fundamental Motor Movements frequency distribution

Category	Amount	Percentage
Exellent	2	2,5%
Good	8	10%
Adequate	38	47,5%
insufficient	20	25%
Very insufficient	12	15%

Table 3 illustrates the frequency distribution of fundamental motor movements among the study participants. The data analysis reveals that most participants exhibit adequate fundamental motor movements, accounting for 47.5% of the total. This is followed by participants with insufficient fundamental motor movements, found in 25% of the participants. A few participants demonstrate a sufficient (2.5%) and sound (10%) level of fundamental motor movements. However, approximately 15% of participants need more fundamental motor movements. This frequency distribution provides a crucial overview of the primary motor movement abilities within the research sample, which will be the focus of further analysis regarding its relationship with other variables.

**Table 4.** Pearson correlation test

Variable	Fundamental motor movements
Emotional Quotient	p = 0,002 r = 0,341
Physical Activity	p = 0,000 r = 0,672

In Table 4, it is revealed that the significance value (p) between Emotional Quotient (EQ) and fundamental motor movements indicates a figure of 0.002, which is smaller than the set significance threshold of 0.05. This signifies a significant relationship between EQ and fundamental motor movements. The analysis also indicates that the significance value between physical activity and fundamental motor movements is 0.000, which is also smaller than the significance threshold of 0.05, confirming a significant relationship between physical activity and fundamental motor movements. Furthermore, based on the Pearson correlation analysis, the calculated r-value for the relationship between EQ and fundamental motor movements is 0.341, exceeding the critical value of 0.232 from the r-table. This indicates a significant relationship between EQ and fundamental motor movements. Meanwhile, the correlation value between physical activities and fundamental motor movements is 0.672, which also exceeds the critical value of 0.232, confirming a significant relationship between physical activities and fundamental motor movements.

**Table 5.** Regression Analysis of EQ and Physical Activity with Fundamental Motor Movements

Variable	R	R Square	F	Sig.
EQ, Physical Activity, fundamental motor movements	0,458	0,725	5,753	0,000

In Table 5, it is noted that the value of R-squared (R<sup>2</sup>) is 0.725 or equivalent to 72.5%; this result indicates that the variables EQ (X1) and physical activity (X2) collectively influence the variable fundamental motor movements (Y) by 72.5%, while the remaining 27.5% is influenced by variables

other than those under study. The calculated F-value is 5.753, which exceeds the critical F-value of 3.15, signifying that EQ and physical activities collectively influence fundamental motor movements.

## DISCUSSION

The findings indicate a significant positive correlation between these two variables in analyzing the relationship between Emotional Quotient (EQ) and fundamental motor movement abilities. The analysis results confirm that students with higher levels of EQ tend to exhibit better fundamental motor movement abilities. Consequently, good emotional development can positively contribute to children's motor progress in developing fundamental movement skills (Li et al., 2022; Sanda, 2018). This underscores the importance of a holistic approach in child education, which addresses cognitive, emotional, and physical aspects (Syaukani et al., 2023). This study provides a solid basis for strengthening educational interventions focusing on developing emotional skills alongside children's fundamental motor abilities, thereby supporting optimal growth and development in the early stages of life.

The research findings indicate a significant correlation between these two variables in analyzing the relationship between physical activity and fundamental motor movement abilities. This finding emphasizes that students engaged in more active physical activities tend to have better fundamental motor movement abilities. Consequently, active participation in physical activities is crucial in supporting elementary school students' motor development (Hasan et al., 2023). Thus, educational institutions and parents must encourage and support children's involvement in diverse and structured physical activities. Regular physical activity can enhance physical fitness, motor skills, and overall well-being in children (Gao & Wang, 2019a; Jaksic et al., 2020; Volmut et al., 2021; Wibowo, 2024).

In analyzing other factors that may influence the relationship between Emotional Quotient (EQ) and physical activities with fundamental motor movement abilities, attention should be paid to several additional variables that could affect the research outcomes. These factors include aspects of the social environment, such as family and peer support, which can influence students' motivation and participation in physical activities. Furthermore, nutritional and dietary patterns are crucial as they affect students' health and energy levels during physical activities (Kasingku, 2023; Tymofiichuk et al., 2019). Other variables to be considered include stress and academic pressure affecting students' emotional balance and genetic factors that

may influence individual responses to physical and emotional stimuli (Harahap et al., 2022; Wuthrich et al., 2020).

Discussing these additional variables is crucial in comprehensively understanding the complex relationship between child development's emotional, physical, and motor aspects. By considering these additional factors, research can provide a more comprehensive overview of the dynamics of the relationship between EQ, physical activity, and fundamental motor movement abilities in elementary school students. Therefore, there is a need for a holistic approach to research that considers the main variables and other factors that may influence research outcomes.

The findings of this study have significant implications in the context of child education. The discovery that Emotional Quotient (EQ) and physical activities positively influence fundamental motor movement abilities indicates that child education should adopt a holistic approach (Engel et al., 2018; Esmaelzadehazad et al., 2022). Emotional Quotient (EQ), encompassing abilities in managing emotions, empathy, and social skills, has proven to play a crucial role in motor development and academic performance (Sánchez-Álvarez et al., 2020; Zhang et al., 2022). Therefore, the integration of emotional education into elementary school curricula can aid students not only academically but also in their physical development. Regular physical activities, such as sports and active games, should be promoted as an integral part of school programs to enhance children's motor skills (Hassan et al., 2022; M. Castelli, 2023).

Based on these findings, it is recommended that schools develop more holistic educational programs by integrating EQ and physical activity components into their daily curriculum. Educational programs should include emotional exercises such as group activities that promote empathy, cooperation, and communication skills. Additionally, schools should allocate sufficient time for daily physical activities by organizing various types of sports and games that can help children develop their fundamental motor skills.

Teacher training should also be enhanced to support students' EQ and physical activities development. Teachers should be equipped with practical strategies and tools to teach emotional skills and motivate students to participate in physical activities. Collaboration with parents is also crucial so that they can continue this support at home. With this comprehensive and integrated approach, it is hoped that children can develop emotionally and physically optimally, ultimately supporting their success in the future.

This research highlights the importance of Emotional Quotient (EQ) and physical activities in supporting the health and well-being of children. The findings that EQ and physical activities significantly contribute to fundamental motor skills indicate that developing emotional skills and good physical activity habits is essential for academic and social development and physical well-being. Children with higher Emotional Quotients tend to have the ability to manage stress and interact more effectively, which in turn can promote more significant involvement in physical activities (Amado-Alonso et al., 2019; Reichert et al., 2022). Regular physical activities have also been shown to improve physical fitness, reduce the risk of obesity, and enhance mental health, all of which contribute to the overall well-being of children (Damian et al., 2018; Gao & Wang, 2019b; Romero-Pérez et al., 2020).

Although this study has demonstrated a significant relationship between emotional quotient (EQ) and physical activities in the primary motor skills of elementary school students, several limitations need to be considered. They may affect the validity of the results. First, the research design using an observational analytical method with a cross-sectional approach has limitations in drawing causal conclusions. The relationships identified between these variables only indicate correlations at one point without considering changes or long-term developments that may occur in the study subjects.

Second, the research sample is limited to elementary school students at the Islamic Kurma Salatiga with an age range of 7-9 years, which also limits the generalizability of the research results. Specific environmental factors, educational curricula, and demographic and cultural characteristics of this population may differ from those of elementary school students in other regions or countries. Therefore, the findings of this study may need to be more generalizable.

Third, the data collected through EQ and physical activity questionnaires, as well as the assessment of basic motor skills, rely on the accuracy and honesty of respondents in filling out the questionnaires. Although the research instruments have been tested for validity and reliability, the possibility of response bias cannot be ignored. For example, respondents may provide more socially desirable than truthful answers.

By acknowledging and understanding these limitations, it is hoped that future research can address these shortcomings through longitudinal designs, increased sample sizes with more variability, and the inclusion of relevant additional variables. This will help strengthen

the validity of the results and provide a more comprehensive understanding of the relationship between EQ, physical activity, and basic motor skills in children.

## CONCLUSION

A few short sentences what the research shows. This study reveals a significant relationship between emotional quotient (EQ) and physical activities in the primary motor skills of elementary school students. The findings indicate that students with higher EQ tend to have better basic motor skills, reflecting the importance of emotional management in children's physical development. Furthermore, regular physical activities have also been proven to play a crucial role in enhancing basic motor skills, such as balance, locomotor, and manipulative movements. Regression analysis results show that combining EQ and physical activities contributes significantly to basic motor skills. These findings emphasize the need for a holistic approach to child education, which includes the development of emotional intelligence and promoting physical activities to support overall motor development and well-being. Therefore, integrating educational programs involving both aspects is highly recommended to create an optimal learning environment for elementary school students.

## REFERENCES

- Amado-Alonso, D., León-del-Barco, B., Mendo-Lázaro, S., Sánchez-Miguel, P., & Iglesias Gallego, D. (2019). Emotional Intelligence and the Practice of Organized Physical-Sport Activity in Children. *Sustainability*, 11(6), 1615. <https://doi.org/10.3390/su11061615>
- Biddle, S. J. H., Ciaccioni, S., Thomas, G., & Vergeer, I. (2019). Physical activity and mental health in children and adolescents: An updated review of reviews and an analysis of causality. *Psychology of Sport and Exercise*, 42, 146–155. <https://doi.org/10.1016/j.psychsport.2018.08.011>
- Bidzan-Bluma, I., & Lipowska, M. (2018). Physical Activity and Cognitive Functioning of Children: A Systematic Review. *International Journal of Environmental Research and Public Health*, 15(4), 800. <https://doi.org/10.3390/ijerph15040800>
- Borland, R. L., Cameron, L. A., Tonge, B. J., & Gray, K. M. (2022). Effects of physical activity on behaviour and emotional problems, mental health and psychosocial well-being in children and adolescents with intellectual disability: A systematic review. *Journal of Applied Research in Intellectual Disabilities*, 35(2), 399–420. <https://doi.org/10.1111/jar.12961>
- Crocker, P. R. E., Bailey, D. A., Faulkner, R. A., Kowalski, K. C., & Mcgrath, R. (1997). Measuring general levels of physical activity: preliminary evidence for the Physical Activity Questionnaire for Older Children. *Medicine & Science in Sports & Exercise*, 29(10), 1344–1349. <https://doi.org/10.1097/00005768-199710000-00011>

- Damian, M., Oltean, A., & Damian, C. (2018). The Impact of sedentary behavior on health and the need for physical activity in children and adolescents. *Revista Romaneasca Pentru Educatie Multidimensionala*, 10(1), 71. <https://doi.org/10.18662/rrem/19>
- Doherty, A., & Forés Miravalles, A. (2019). Physical Activity and Cognition: Inseparable in the Classroom. *Frontiers in Education*, 4. <https://doi.org/10.3389/feduc.2019.00105>
- Engel, A. C., Broderick, C. R., van Doorn, N., Hardy, L. L., & Parmenter, B. J. (2018). Exploring the Relationship Between Fundamental Motor Skill Interventions and Physical Activity Levels in Children: A Systematic Review and Meta-analysis. *Sports Medicine*, 48(8), 1845–1857. <https://doi.org/10.1007/s40279-018-0923-3>
- Esmaeaelzadehazad, S., Valadi, S., & Gabbard, C. (2022). The impact of maternal emotional intelligence on young children's motor development. *European Journal of Developmental Psychology*, 19(4), 494–510. <https://doi.org/10.1080/17405629.2021.1918094>
- Farmer, J., Mistry, M., & Jainier, A. K. (2020). Emotional Intelligence for Healthcare. *Sushruta Journal of Health Policy & Opinion*, 13(1), 26–27. <https://doi.org/10.38192/13.1.8>
- Gao, Z., & Wang, R. (2019a). Children's motor skills competence, physical activity, fitness, and health promotion. *Journal of Sport and Health Science*, 8(2), 95–97. <https://doi.org/10.1016/j.jshs.2018.12.002>
- Gao, Z., & Wang, R. (2019b). Children's motor skills competence, physical activity, fitness, and health promotion. *Journal of Sport and Health Science*, 8(2), 95–97. <https://doi.org/10.1016/j.jshs.2018.12.002>
- Harahap, N. R. A., Badrujaman, A., & Hidayat, D. R. (2022). Determinants of Academic Stress in Students. *Bisma The Journal of Counseling*, 6(3), 335–345. <https://doi.org/10.23887/bisma.v6i3.53548>
- Hasan, H. A., Adi, S., Hariyanto, E., Khongrunghok, A., Oktaviani, H. I., & Fajarianto, O. (2023). Physical Activity with Play and Game Model to Improve the Cognitive of Elementary School Students. *Edcomtech: Jurnal Kajian Teknologi Pendidikan*, 8(1), 49. <https://doi.org/10.17977/um039v8i12023p49>
- Hassan, M. A., Liu, W., McDonough, D. J., Su, X., & Gao, Z. (2022). Comparative Effectiveness of Physical Activity Intervention Programs on Motor Skills in Children and Adolescents: A Systematic Review and Network Meta-Analysis. *International Journal of Environmental Research and Public Health*, 19(19), 11914. <https://doi.org/10.3390/ijerph191911914>
- Jaksic, D., Mandic, S., Maksimovic, N., Milosevic, Z., Roklicer, R., Vukovic, J., Pocek, S., Lakicevic, N., Bianco, A., Cassar, S., & Drid, P. (2020). Effects of a Nine-Month Physical Activity Intervention on Morphological Characteristics and Motor and Cognitive Skills of Preschool Children. *International Journal of Environmental Research and Public Health*, 17(18), 6609. <https://doi.org/10.3390/ijerph17186609>
- Kasingku, J. D. (2023). The Role of Healthy Food to Improve the Physical and Spiritual Health of Students. *JUPE: Jurnal Pendidikan Mandala*, 8(3), 853. <https://doi.org/10.58258/jupe.v8i3.5891>
- Kochhar, M., & Tripathi, K. N. (2022). Study of Emotional Intelligence and Well-Being among Working Professionals. *Mind and Society*, 11(02), 99–108. <https://doi.org/10.56011/mind-mri-112-202211>
- Kowalski, K. C., Crocker, P. R. E., & Faulkner, R. A. (1997). Validation of the Physical Activity Questionnaire for Older Children. *Pediatric Exercise Science*, 9(2), 174–186. <https://doi.org/10.1123/pes.9.2.174>
- Kuzik, N., Naylor, P.-J., Spence, J. C., & Carson, V. (2020). Movement behaviours and physical, cognitive, and social-emotional development in preschool-aged children: Cross-sectional

- associations using compositional analyses. *PLOS ONE*, 15(8), e0237945. <https://doi.org/10.1371/journal.pone.0237945>
- Kvalø, S. E., & Natlandsmyr, I. K. (2021). The effect of physical-activity intervention on children's health-related quality of life. *Scandinavian Journal of Public Health*, 49(5), 539–545. <https://doi.org/10.1177/1403494820971493>
- Li, Q., Wang, Q., Xin, Z., & Gu, H. (2022). The Impact of Gross Motor Skills on the Development of Emotion Understanding in Children Aged 3–6 Years: The Mediation Role of Executive Functions. *International Journal of Environmental Research and Public Health*, 19(22), 14807. <https://doi.org/10.3390/ijerph192214807>
- M. Castelli, D. (2023). Physical Activity, Fitness, and Cognitive Function in Children and Adolescents. In *Sport and Fitness in Children and Adolescents - A Multidimensional View*. IntechOpen. <https://doi.org/10.5772/intechopen.104719>
- Reichert, M., Brüßler, S., Reinhard, I., Braun, U., Giurgiu, M., Hoell, A., Zipf, A., Meyer-Lindenberg, A., Tost, H., & Ebner-Priemer, U. W. (2022). The association of stress and physical activity: Mind the ecological fallacy. *German Journal of Exercise and Sport Research*, 52(2), 282–289. <https://doi.org/10.1007/s12662-022-00823-0>
- Romero-Pérez, E. M., González-Bernal, J. J., Soto-Cámara, R., González-Santos, J., Tánori-Tapia, J. M., Rodríguez-Fernández, P., Jiménez-Barrios, M., Márquez, S., & de Paz, J. A. (2020). Influence of a Physical Exercise Program in the Anxiety and Depression in Children with Obesity. *International Journal of Environmental Research and Public Health*, 17(13), 4655. <https://doi.org/10.3390/ijerph17134655>
- Sánchez-Álvarez, N., Berrios Martos, M. P., & Extremera, N. (2020). A Meta-Analysis of the Relationship Between Emotional Intelligence and Academic Performance in Secondary Education: A Multi-Stream Comparison. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.01517>
- Sanda, T.-U. (2018). Developing children emotional intelligence through game and movement situational training. *Scientific Bulletin of Naval Academy*, XIX(1), 292–298. <https://doi.org/10.21279/1454-864X-18-I1-044>
- Syaukani, A. A., Mohd Hashim, A. H., & Subekti, N. (2023). Conceptual Framework of Applied Holistic Education in Physical Education and Sports: A Systematic Review of Empirical Evidence. *Physical Education Theory and Methodology*, 23(5), 794–802. <https://doi.org/10.17309/tmfv.2023.5.19>
- Tymofiichuk, I. R., Dotsiuk, L. H., Semenenko, S. B., Boreiko, L. D., & Semenenko, N. Yu. (2019). Analysis of food rates of students of the faculty of physical education. *One Health and Nutrition Problems of Ukraine*, 51(2), 82–86. <https://doi.org/10.33273/2663-9726-2019-51-2-82-86>
- Veldman, S. L. C., Chin A Paw, M. J. M., & Altenburg, T. M. (2021). Physical activity and prospective associations with indicators of health and development in children aged <math>\leq 5</math> years: a systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 18(1), 6. <https://doi.org/10.1186/s12966-020-01072-w>
- Volmut, T., Pišot, R., Planinšec, J., & Šimunič, B. (2021). Physical Activity Drops During Summer Holidays for 6- to 9-Year-Old Children. *Frontiers in Public Health*, 8. <https://doi.org/10.3389/fpubh.2020.631141>
- Wibowo, C. (2024). A Study on the Analysis of Fundamental Motor Skills and Physical Activity Among Elementary School Students. *Indonesian Journal of Sport Management*, 4(1).
- Wibowo, C., Christovel Dese, D., & Eko Nopiyanto, Y. (2024). Developing a precise gross motor skills assessment instrument for elementary school students (ages 7-9). *Pedagogy of*

*Physical Culture and Sports*, 28(2), 84–92.  
<https://doi.org/10.15561/26649837.2024.0201>

Wuthrich, V. M., Jagiello, T., & Azzi, V. (2020). Academic Stress in the Final Years of School: A Systematic Literature Review. *Child Psychiatry & Human Development*, 51(6), 986–1015.  
<https://doi.org/10.1007/s10578-020-00981-y>

Zhang, H., Cheng, J., & Wang, Z. (2022). Relationship Among Motor Behavior, Motor Development, and Motor Performance in Children Aged 7–8 Years in China. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.898266>