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RESEARCH ARTICLE

THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY PERFORMANCE LEVELS AND CHILD DEVELOPMENT AMONG CHILDREN IN ALAHSA CITY

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Abstract

Background: Physical activity, encompassing any bodily movement that requires energy expenditure through muscular effort, is integral to health promotion, disease prevention, and rehabilitation. In children, it plays a crucial role in developing fundamental motor skills (FMS) such as stability, locomotion, and object control, which form the basis for more complex physical and athletic abilities. The early childhood phase, particularly between the ages of three and seven, represents a vital window for physical, cognitive, and socio-emotional growth.
Objective: This study aimed to investigate the association between levels of physical activity performance and developmental outcomes in school-aged children residing in Al Ahsa, Saudi Arabia.
Methods: A cross-sectional research design was utilized, employing a structured questionnaire administered to parents to collect data regarding their children's physical activity engagement and developmental progress. The questionnaire employed a four-point Likert scale (ranging from 1: strongly agree to 4: strongly disagree) to assess perceptions related to the influence of physical activity on physical, cognitive, and social domains of child development. Data were analyzed using appropriate statistical methods to extract meaningful interpretations.
Results: Results demonstrated a significant positive perception of physical activity's role in enhancing children's social capabilities and cooperative behaviors, with a mean agreement score of 3.40. Furthermore, physical activity was widely recognized for contributing to physical development, particularly muscle and bone health, with a mean score of 3.54.
Conclusion: The findings emphasize the diverse developmental benefits of regular physical activity in children, notably in physical, cognitive, and social domains. The role of parents emerged as pivotal in promoting and maintaining children's participation in active behaviors. These insights highlight the importance of implementing targeted awareness initiatives and structured physical activity programs to support the comprehensive development and well-being of children.

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Introduction:-

Physical activity refers to any movement of the body that requires energy expenditure and is produced by skeletal muscles. It includes a wide variety of activities such as sports, active play, and participation in structured physical programs【1】. Engaging in physical activity is associated with numerous health benefits, including disease prevention, therapeutic intervention, and the promotion of overall well-being【2】.

A key aspect of childhood development is the acquisition of fundamental motor skills (FMS), which form the basis for more complex physical and athletic activities. These skills are generally categorized into three types: locomotor skills (LMS), such as running; object control skills (OCS), like catching or throwing a ball; and stability skills (SS), which involve balancing and maintaining posture【3】. Early childhood, typically between the ages of 3 and 7 years, is a critical period for rapid physical, cognitive, and emotional development. During this time, participation in physical activity has been shown to offer long-term benefits for both motor and cognitive development【4-6】.

However, a growing concern is the increasing prevalence of childhood obesity, which poses a major threat to both physical activity levels and overall development. Childhood obesity has reached epidemic proportions globally, making it essential to intervene at an early stage. Encouraging regular physical activity through age-appropriate play and structured programs can help to reduce the risks associated with obesity【7-9】. Parents, as primary role models, have a crucial influence on their children's physical activity habits. By fostering active lifestyles, they can play a pivotal role in preventing obesity and its related negative outcomes【10】.

While unstructured physical activity can be beneficial, it may not always be sufficient to improve motor proficiency in children. There is an increasing demand for organized physical activity programs that focus on specific outcomes such as coordination, balance, and motor skills【11-13】. Moreover, lifestyle factors such as screen time, dietary habits, and family dynamics significantly influence children's physical activity behaviors. A comprehensive understanding of these factors can help health professionals, educators, policymakers, and community organizations design effective strategies to encourage physical activity among children【14, 15】.

Methods

Study Area/Setting

This study will be conducted in schools located in Al Ahsa, Saudi Arabia. Al Ahsa, with its diverse educational institutions, provides an ideal setting to explore the relationship between physical activity levels and child development. The research will focus on school-aged children in this region, offering insights into how physical activity influences developmental outcomes in early childhood.

Study Subjects

The participants in this study will be male children between the ages of 3 to 7 years old, enrolled in schools within Al Ahsa. Only children within this age range will be included in the study, as this period is crucial for physical and cognitive development. Children outside this age group will be excluded from the study to maintain consistency and relevance to the research objectives.

Study Design

A cross-sectional survey design will be utilized in this research. This quantitative research method is suitable for examining relationships between physical activity levels and child development at a specific point in time. The descriptive nature of the study will involve observing and documenting children's behaviors through a structured questionnaire, focusing on how physical activity may impact various developmental milestones in young children. Data will be collected from the children's parents, who will respond to the survey based on their child's activity levels and developmental progress.

Sample Size

The sample size for this study will be determined using purposive sampling, which involves selecting participants who meet the inclusion criteria. The total number of children in Al Ahsa, as provided by the Ministry of Education, is approximately 13,694. Based on this population size, the required sample size for the study is calculated to be 374

children, ensuring a 95% confidence interval and a 5% margin of error, as estimated using the Raosoft sample size calculator.

Sampling Technique

Convenience sampling, a non-probability sampling method, will be employed to recruit participants for this study. Data will be collected from children who meet the inclusion criteria across various schools in Al Ahsa. This method ensures that participants are easily accessible and that the sample reflects the available population, providing valuable insights into the physical activity levels and child development of children in this region.

Data Collection Methods, Instruments Used, and Measurements:-

The data will be gathered through a survey that will be distributed to the families of children in Al Ahsa. The survey will consist of 15 questions designed to assess the relationship between children's physical activity levels and their developmental outcomes. The questions will be structured on a four-point Likert scale, where participants will indicate their level of agreement or disagreement with statements related to physical activity and development. The survey will be distributed through social media platforms like Google Forms and WhatsApp to facilitate easy access. To ensure validity and reliability, the questionnaire will be reviewed by an occupational therapist and a physical therapist.

Data Management and Analysis Plan

Once data is collected, it will be analyzed using IBM SPSS Statistics (version 24.0). Descriptive statistics will be used to summarize participant characteristics and survey responses. Inferential statistics will be applied to draw conclusions about the broader population and to explore the relationship between physical activity and child development. This analysis will provide valuable insights into how physical activity levels influence developmental outcomes in young children in Al Ahsa.

Results:-

The results of the survey conducted among 374 respondents provide substantial insights into the perceptions of physical activities and their impact on child development. The responses to 15 questions predominantly reflect a positive attitude toward physical activities, with the majority of participants agreeing or strongly agreeing on their significance in fostering physical, cognitive, social, and emotional skills in children.

A quantitative analysis using a four-point Likert scale was employed for most questions, where 1 represented "strongly disagree," 2 "disagree," 3 "agree," and 4 "strongly agree." One question utilized a reversed scale to offer a more detailed evaluation of perceptions.

The analysis revealed strong agreement on the role of physical activities in enhancing teamwork and social skills, as reflected by an average score of 3.40. Respondents emphasized that physical activities promote interpersonal skills, such as effective communication, conflict resolution, and collaboration, all of which are crucial for social development. In addition, physical activities were recognized as fundamental to promoting physical health, with an average score of 3.54 for questions related to muscle and bone development, reflecting a consensus on the importance of physical activity in fostering proper growth and preventing health-related issues.

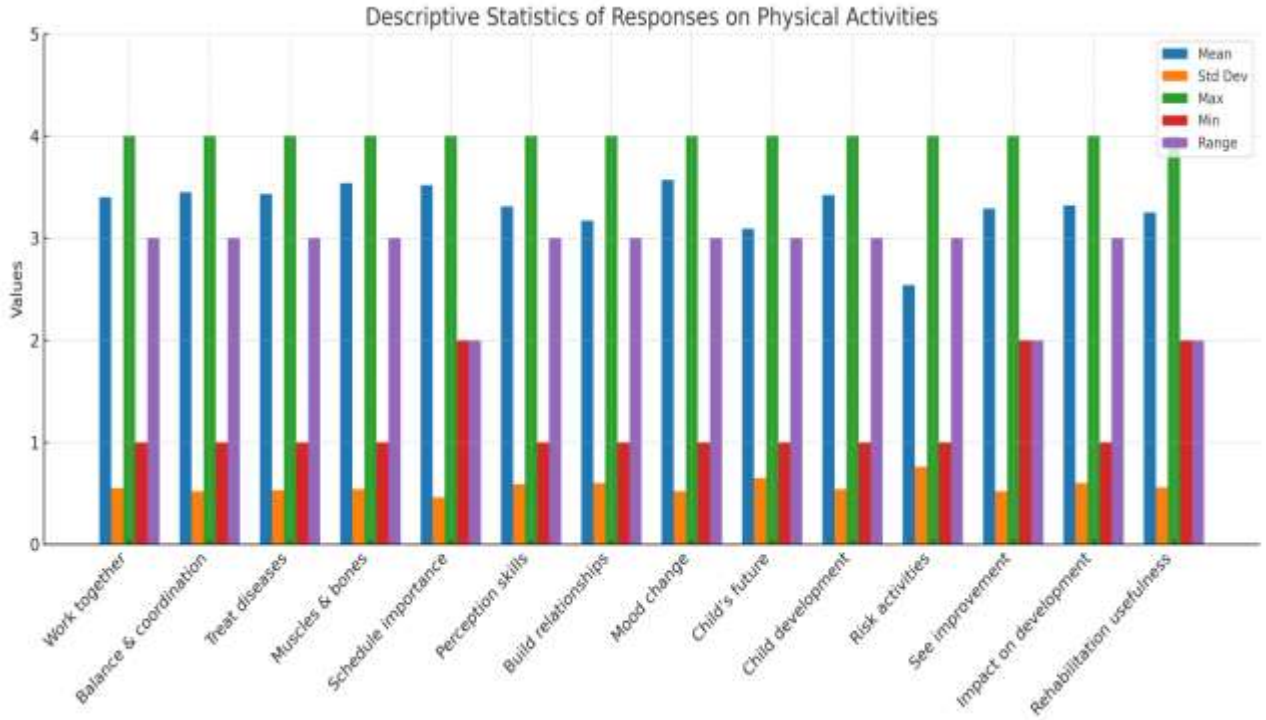
The cognitive and emotional benefits of physical activities were similarly acknowledged. Responses indicated that physical activities play a crucial role in improving mood, reducing stress, and building resilience, with an average score of 3.57 for questions related to emotional well-being. Respondents noted that engagement in physical activities contributes to better focus, emotional regulation, and enhanced ability to manage both academic and social pressures.

Collectively, the findings underscore the integral role of physical activities in fostering comprehensive child development across physical, cognitive, social, and emotional domains. The overwhelmingly positive responses further highlight the importance of prioritizing physical activities within educational and community programs. These insights serve as a foundation for future interventions and policies aimed at promoting active lifestyles and supporting holistic child development.

Table 1:- Descriptive Statistics of Participant Responses Regarding Physical Activities.

No.	Statement	Mean	Std. Dev	Max	Min	Range
1	Do you think that physical activities contribute to teaching how to work together?	3.40	0.55	4	1	3
2	Do you think that practicing activities helps in developing balance and coordination skills?	3.45	0.52	4	1	3
3	Do you support that physical activities play a major role in treating some diseases?	3.43	0.53	4	1	3
4	In your opinion, do physical activities help in the growth of muscles and bones?	3.54	0.54	4	1	3
5	Do you think it is important to have a schedule for physical activities?	3.52	0.46	4	2	2
6	Practicing physical activities helps you develop perception and planning skills?	3.31	0.59	4	1	3
7	Doing physical activities helps you build relationships?	3.17	0.60	4	1	3
8	What do you think, do sports activities contribute to changing a person's mood?	3.57	0.52	4	1	3
9	Do physical activities help in understanding or realizing what the child wants for his future?	3.09	0.65	4	1	3
10	Do you think that physical activities play a major role in a child's development?	3.42	0.54	4	1	3
11	Do you support physical activities that contain a moderate level of risk?	2.54	0.76	4	1	3
12	Do you see any improvement after practicing physical activities?	3.29	0.52	4	2	2
13	Do you think that the importance of physical activity has an impact on the development of children?	3.32	0.60	4	1	3
14	In your opinion, is rehabilitation useful for you when you are unable to engage in physical activity?	3.25	0.56	4	2	2

Graph 1:- Statistics Representing Table as Bar Chart.



Discussion:-

The current study presents strong evidence of a positive association between higher levels of physical activity and beneficial outcomes across multiple areas of development, including body composition, bone and skeletal health, motor skills, psychosocial adjustment, and cognitive growth. These findings reinforce the role of physical activity as a fundamental element of comprehensive child development, addressing physical, mental, emotional, and social domains.

Participant responses revealed a consistently positive perception of the benefits of physical activity. Notably, the average rating of 3.40 on items related to collaboration and social interaction reflects a strong belief in its ability to foster teamwork among children. Similarly, items concerning physical development—particularly bone and muscle growth—achieved a high mean score of 3.54, illustrating widespread acknowledgment of the role of physical activity in supporting children's physiological health. The emotional advantages of physical activity were also prominently recognized, with a mean score of 3.57, indicating the perception that it enhances mood, reduces anxiety, and builds emotional resilience.

The cognitive benefits of regular physical activity are well-supported by existing literature. Engagement in physical movement has been linked to improvements in attention span, memory retention, classroom behavior, and academic achievement. During early childhood, a period marked by significant neural development and brain plasticity, physical activity can serve as a catalyst for cognitive growth. Studies involving school-based programs have shown that children participating in aerobic physical education exhibit enhanced executive functioning, reinforcing the sensitivity of early neural development to physical stimuli.

Though social-emotional development is frequently associated with physical activity, findings in this domain are less consistent. While some research fails to demonstrate a direct link between physical activity and quality of life, others suggest potential connections to behavioral outcomes, particularly externalizing behaviors. These inconsistencies point to the necessity for more robust, methodologically sound research to better understand the nuanced relationship between physical activity and young children’s emotional and social development.

Parental influence has emerged as a key factor in establishing and maintaining active routines in children. Parents who model physically active lifestyles and promote their children’s participation significantly impact their long-term engagement in physical activities. Evidence indicates that active parental involvement is positively associated with increased physical activity in preschool-aged children, highlighting the value of parent-focused interventions in promoting healthy behavior patterns from a young age.

Despite these positive findings, challenges remain in identifying the most effective forms of physical activity for child development. A major limitation lies in the inconsistency of measurement methods across studies. The use of both direct and indirect metrics complicates the interpretation and comparison of findings, emphasizing the need for standardized and reliable evaluation tools.

Limitations:-

Several limitations affected the interpretation of this study. Chief among them is the inconsistency in the methods used to assess physical activity. The reliance on both direct and indirect measurements across different studies created difficulty in drawing standardized conclusions. Additionally, pinpointing which specific types of physical activity contribute most significantly to child development remains unclear, limiting the ability to recommend targeted interventions.

Implications:-

These findings underline the critical need to incorporate physical activity into early education settings and broader community health initiatives. To ensure well-rounded development, educators, health professionals, and policymakers should prioritize strategies that promote physical activity among children, with a focus on scientifically validated approaches. Active parental involvement should be a core element of these programs, as parents play an influential role in shaping children’s attitudes and habits related to physical activity.

To strengthen these efforts, further research should aim to standardize how physical activity is measured and identify which intervention models are most effective for enhancing specific developmental outcomes. Establishing clear metrics will help guide the creation of more targeted and impactful programs.

Conclusion:-

Physical activity serves as a cornerstone of comprehensive child development, positively influencing physical health, cognitive functioning, emotional resilience, and social skills. Parental support and role modeling are essential in encouraging active lifestyles. Although age or developmental stage may limit participation in certain activities, the overall benefits of physical movement are widely recognized. Future initiatives should work to ensure that all parents are aware of these benefits and actively incorporate physical activity into their children's daily routines. Continued research and practical interventions are necessary to support active, healthy childhoods and maximize developmental outcomes.

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Ethics Statement

The scientific and Institutional Research Board approved the study (XXXXX/XXX/X) and met the EthicalprinciplesguidelinesoftheDeclarationofHelsinki.Weconfirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with thoseguidelines.

Consent

Informed consent was obtained from all participants and their legal guardians included in the study.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Permissionto Reproduce Material from Other Sources

Not Applicable.

Study Registration

Not Applicable.

References:-

1. World Health Organization. (2017). **Physical activity**. http://www.who.int/mediacentre/factsheets/fs385/en/
2. Warburton, D. E., &Bredin, S. S. (2017). Health benefits of physical activity: A systematic review of current systematic reviews. **Current Opinion in Cardiology, 32**(5), 541–556. https://doi.org/10.1097/HCO.0000000000000437
3. Barnett, L. M., Stodden, D., Cohen, K. E., Smith, J. J., Lubans, D. R., Lenoir, M., & Dudley, D. (2016). Fundamental movement skills: An important focus. **Journal of Teaching in Physical Education, 35**(3), 219–225. https://doi.org/10.1123/jtpe.2014-0209
4. UNICEF. (2017). **Early childhood development**. https://www.unicef.org/dprk/ecd.pdf
5. Riethmuller, A. M., Jones, R. A., &Okely, A. D. (2009). Efficacy of interventions to improve motor development in young children: A systematic review. **Pediatrics, 124**(4), e782–e792. https://doi.org/10.1542/peds.2009-0333
6. Fisher, A., Boyle, J. M., Paton, J. Y., Tomporowski, P., Watson, C., McColl, J. H., & Reilly, J. J. (2011). Effects of a physical education intervention on cognitive function in young children: Randomized controlled pilot study. **BMC Pediatrics, 11**, Article 97. https://doi.org/10.1186/1471-2431-11-97
7. Lobstein, T., Baur, L., &Uauy, R. (2004). Obesity in children and young people: A crisis in public health. **Obesity Reviews, 5**(S1), 4–104. https://doi.org/10.1111/j.1467-789X.2004.00133.x

8. Hinkley, T., Crawford, D., Salmon, J., Okely, A. D., &Hesketh, K. (2008). Preschool children and physical activity: A review of correlates. **American Journal of Preventive Medicine, 34**(5), 435–441. https://doi.org/10.1016/j.amepre.2008.02.001
9. Oliver, M., Schofield, G. M., &Kolt, G. S. (2007). Physical activity in preschoolers: Understanding prevalence and measurement issues. **Sports Medicine, 37**(12), 1045–1070. https://doi.org/10.2165/00007256-200737120-00003
10. Loprinzi, P. D., &Trost, S. G. (2010). Parental influences on physical activity behavior in preschool children. **Preventive Medicine, 50**(3), 129–133. https://doi.org/10.1016/j.ypmed.2009.11.010
11. Sääkslahti, A., Numminen, P., Varstala, V., Helenius, H., Tammi, A., Viikari, J., &Välimäki, I. (2004). Physical activity as a preventive measure for coronary heart disease risk factors in early childhood. **Scandinavian Journal of Medicine & Science in Sports, 14**(3), 143–149. https://doi.org/10.1111/j.1600-0838.2004.00349.x
12. Fisher, A., Reilly, J. J., Kelly, L. A., Montgomery, C., Williamson, A., & Paton, J. Y. (2005). Fundamental movement skills and habitual physical activity in young children. **Medicine & Science in Sports & Exercise, 37**(4), 684–688. https://doi.org/10.1249/01.MSS.0000159138.48107.7D
13. Deli, E., Bakle, I., &Zachopoulou, E. (2006). Implementing intervention movement programs for kindergarten children. **Journal of Early Childhood Research, 4**(1), 5–18. https://doi.org/10.1177/1476718X06059785
14. Maher, C. A., Williams, M. T., & Olds, T. (2010). An internet-based physical activity intervention for adolescents with cerebral palsy: A randomized controlled trial. **Developmental Medicine & Child Neurology, 52**(5), 448–455. https://doi.org/10.1111/j.1469-8749.2009.03404.x
15. Van Wely, L., Balemans, A., & Becher, J. (2014). Physical activity stimulation program for children with spastic cerebral palsy did not improve physical activity: A randomized controlled trial. **Journal of Physiotherapy, 60**(1), 40–45. https://doi.org/10.1016/j.jphys.2013.12.005.