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Revisión

Natación en niños: Beneficios científicos para un desarrollo acuático temprano

Swimming in children: benefits for early aquatic development

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Resumen

La natación ofrece diversos beneficios para el desarrollo de los niños, incluyendo aspectos físicos, cognitivos y psicosociales. El presente estudio tiene como objetivo conocer los beneficios de la natación en los niños para el desarrollo acuático temprano. Se realizó una revisión sistemática de análisis bibliográfico mediante técnicas de rastreo analítico y cuantificación documental desde diversos buscadores: Google académico, Dialnet, Redalyc, Scielo, donde se obtuvieron un total de 223 documentos, seleccionando la muestra de esta, para luego continuar con la siguiente codificación: 1) Título del artículo; 2) Nombre de los autores y año; 3) Objetivo; 4) Muestra- Instrumentos; 5) Resultados. Este hallazgo apoya la noción de que la exposición a espacios azules, como océanos, lagos o piscinas, puede tener una influencia positiva en los resultados de salud mental de los niños. La incorporación de actividades acuáticas en un enfoque integral del desarrollo infantil puede ofrecer oportunidades adicionales para promover resultados positivos en materia de salud mental. Los resultados apoyan la eficacia de la natación y las actividades acuáticas para promover el desarrollo físico, psicológico y psicomotor de los niños.

Palabras clave: Natación, niños, desarrollo acuático.

Abstract

Swimming offers various benefits for children's development, including physical, cognitive, and psychosocial aspects. The present study aim to known the benefits the

Swimming in children for development for early aquatic. A systematic review of bibliographic analysis was carried out through analytical tracking techniques and documentary quantification from various search engines: Google Scholar, Dialnet, Redalyc, Scielo, where a total of 223 documents were obtained, selecting the sample of this, then continued with the following coding: 1) Title of the article; 2) Name of the authors and year; 3) Objective; 4) Sample- Instruments; 5) Results. This finding supports the notion that exposure to blue spaces, such as oceans, lakes, or swimming pools, can have a positive influence on mental health outcomes in children. Incorporating aquatic activities into a comprehensive approach to child development may provide additional opportunities for promoting positive mental health outcomes. The findings support the efficacy of swimming and water activities in promoting physical, psychological, and psychomotor development in children.

Keywords: Swimming, children, aquatic development.

Introduction

The regular practice of physical exercise has been shown to be effective in reducing depressive symptoms in people (Brito & Brito Mancheno, 2023). In addition, it has been observed that activities such as swimming can promote healthy lifestyles and prevent overweight and obesity (Brito Mancheno, 2023). Swimming can have positive effects on children's cognitive development.

According to the concept of "embodied cognition," motor development is essential in the first 1000 days of life, as the child explores and learns new information from the environment (Puspodari et al., 2023). Among motor activities, infant swimming allows infants to perform movements that they cannot perform on dry land. Because movements become slower in the water, sensory perception of these movements is amplified, which can potentially influence later language development (Maza et al., 2021; Valladares y Posso, 2022) In addition, swimming can stimulate active hormones, such as adrenaline, which may contribute to higher levels of intelligence.

Swimming offers various benefits for children's development, including physical, cognitive, and psychosocial aspects. Research has shown that swimming can improve lung function in children with asthma, enhance motor development in infants, and reduce cardiometabolic risk in children and adolescents with overweight and obesity (Leo et al., 2022; Machado et al., 2022).

Additionally, swimming has been found to be a meaningful occupation for children with autism, with potential benefits for their sleep behaviors. These findings highlight the positive impact of swimming on the overall well-being and development of children. (Barros & Don Anjos, 2023; Carter & Koch, 2023). The present study aims to know the benefits the Swimming in children for development for early aquatic.

Method

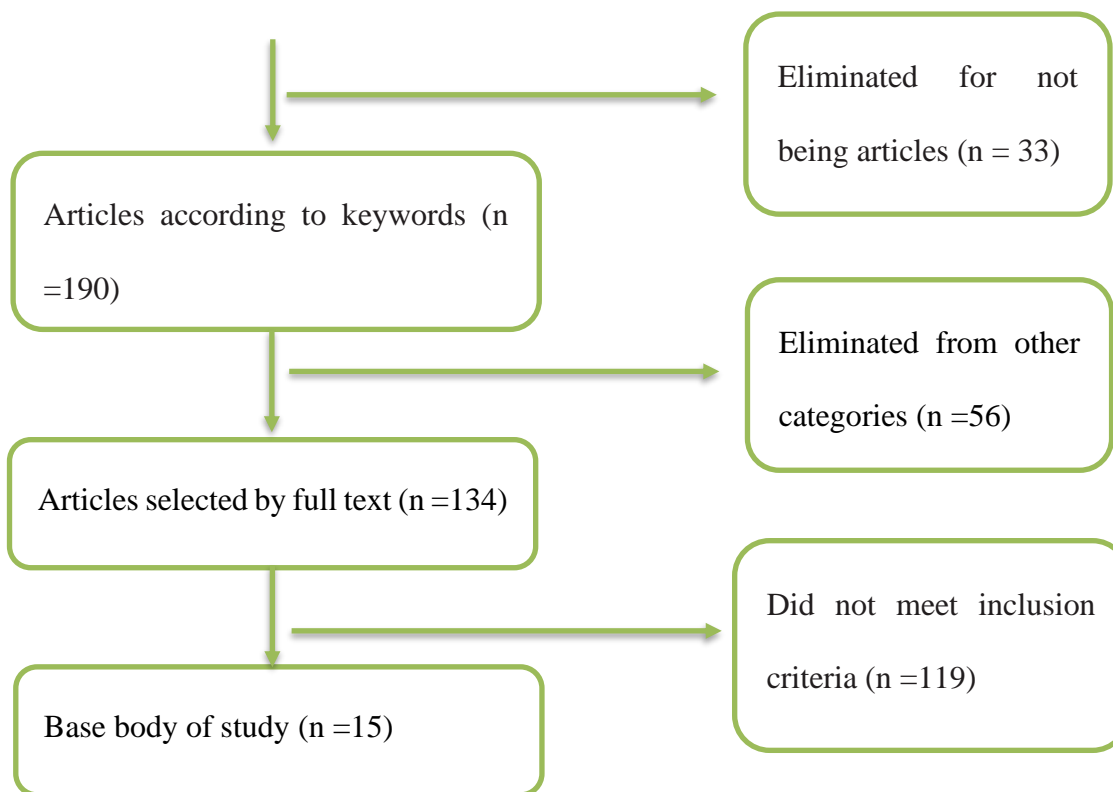
A systematic review of bibliographic analysis was carried out through the use of analytical tracking techniques and documentary quantification, therefore, the indicators established by the Prisma statement for systematic review were followed (Urrutia & Bonfill, 2010; Hutton et al., 2015; Palacios et al., 2022; Manangón et al., 2020). To gather the necessary information, multiple sources were searched, including the prestigious WOS (Web of Science) database and various academic search engines such as Google Scholar, Dialnet, Redalyc and SciELO. In order to contrast the information obtained in the databases used. The review was carried out during the month of January 2024, analyzing studies that deal with Swimming in children. Keywords and search operators such as "swimming", "children", "aquatic development" were used to search for studies that addressed the topic of interest.

The inclusion criteria to define the set of research papers that are part of the study sample were (1) Scientific studies that present swimming in children and benefits for early aquatic development as variables ;(2) Articles that resort to a longitudinal design; (3) Research that show statistical results that allow analyzing the study variables; (4) Publications from the last five years from 2020 to 2024.

Figure 1

Flow chart of the selection of the base body of study

Publications in search engines (n =223) Google Scholar (130), Dialnet (55), Redalyc (15), SciELO (23)



It was discerned which documents were consistent with the object of study. The scientific articles of this study was 223 documents collected in search engines 33 were eliminated for not being articles, articles according to their keyword 190, eliminated by other categories 56, articles selected by full text 134, do not meet the different inclusion criteria, where the sample that consisted of 15 of the base body , of this systematic review corresponds to publications of scientific nature, considered after applying the inclusion and coding criteria and more appropriate for the subject, where it was broken down by selecting the title, author, objectives, sample and instruments and results

Results

Table 1

Analysis of selected articles

Title	Authors	Objective	Sample- Instruments	Results
Teaching Foundational Aquatic Skills to Children in Open Water Environments	Button, C., Button, A. J., Jackson, A. M., Cotter, J. D., & Maraj, B. (2020).	The aim of this study was to assess the effectiveness of teaching children water safety knowledge and skills in open water environments (i.e., harbor, river, and surf).	The aquatic knowledge and skills of 98 children (7-11 years old) were tested in a swimming pool before, immediately after, and three months after receiving a three-day intensive education program.	Three-month retention of these skills was generally high (i.e., competency levels were either maintained or improved)
Exploring children's participation in commercial swimming lessons through the social determinants of health	Willcox-Pidgeon, S. M., Peden, A. E., & Scarr, J. (2021)	Identify the demographics of those attending commercial swimming lessons and impact of the SDH of socio-economic disadvantage	Aged 5-12 years enrolled in commercial swimming lessons across New South Wales (NSW), South Australia (SA), and Victoria	Swimming and water safety lessons, in part, have reduced drowning in children, while also enabling healthy aquatic participation
Young children's use of blue spaces and the impact on their health, development and environmental awareness	George, P., Murray, K., & Christian, H. (2024).	The aim of this study was to explore Western Australian parents' perceptions of how their families, particularly young children interact	A qualitative approach was deemed the most appropriate method. Purposive and snowball sampling was used to recruit participants who satisfied the study criteria	Some parents shared their perception around how visiting blue spaces could positively impact their child's mental health.
The Value of Swimming and Aquatical Exercises in the Development of Down Syndrome Children's Body Schema	Singuran, A. I., Teodorescu, S., Aivaz, K. A., & Baltag, O. M. (2023)	This study sought to show how swimming and aquatic activities might help people with Down syndrome with their coordination and balance	The target group consisted of 15 children (n = 15), children who did not practice immediate lessons or any activity involving physical movement in water.	We can reject the null hypothesis that swimming and water activities do not build body schema, a component of psychomotor skills
Effect of training with fins on swimming performance in	Sellés-Pérez, S., Arévalo, H., Altavilla, C., Guerrero, DJ, & Cejuela, R. (2023)	Thus, it is important finding adequate methodologies to improve the teaching-learning	Methods: 37 kids and young recreational swimmers participated in this study. 20 kids swimmers The study	all groups improved their performance after the intervention. However, no significant

kids and young recreational swimmers		process of the technical parameters of the swimming styles	lasted 8 weeks, with two 1-hour weekly sessions.	differences were found between groups except in KSF and KNSF
More on the Use of Goggles and Snorkel in Learning-to-Swim: New Results for Children Without Fear of Water	Misimi, F., Kajtna, T., Štirn, I., Zoretić, D., Misimi, S., & Kapus, J. (2023)	Our purpose in this study was to examine the effects of using goggles and snorkel during a learn-to-swim program on the aquatic skills.	Following informed parental consent, 40 children (aged 10–11 years) were randomly divided into two groups	Both groups improved aquatic skills such that the only group differences were for the blowing bubbles test
Assessing University Students' Abilities and Challenges While Learning to Swim	Der Rowe, V. (2023)	The purpose of the study was to assess university students' abilities and challenges while learning to swim	The sampling technique used is a census approach (complete enumeration) to select the 40 students	The results of the study revealed that 72% of the participants had some level of fear in the water or deep water
The Effects of Aquatic Versus Kata Training on Static and Dynamic Balance in Children with Autism Spectrum Disorder	Ansari, S., Hosseinkhanzadeh, A. A., AdibSaber, F., Shojaei, M., & Daneshfar, A. (2021)	The present study aimed to compare the effect of a land-based and a swimming-based exercise program on balance abilities in children with autism	Thirty children were voluntarily selected and randomly assigned to karate exercise, aquatic training and control groups. Participants practiced for 10 weeks, 2 sessions of 60 min per week.	The results showed that both interventions had a significant effect on balance abilities ($p < 0.001$); interestingly, we found the greater improvement in balance performance
The potential of 360-degree virtual reality videos to teach water-safety skills to children	Araiza-Alba, P., Keane, T., Matthews, B., Simpson, K., Strugnell, G., Chen, W. S., & Kaufman, J. (2021)	This study investigated the potential of Virtual Reality (VR), using 360-degree (360°) videos, as a tool to teach children about water-safety skills.	Children (n = 182) aged 10–12 years were randomly assigned to learn about water safety using one of three instructional mediums	Teacher feedback also indicated that 360° VR videos are a useful, engaging, and effective method of learning.
Effectiveness of surf therapy for children with disabilities	Clapham, E. D., Lamont, L. S., Shim, M., Lateef, S., & Armitano, C. N. (2020).	The purpose of this study was to explore the effects of an eight-week surfing intervention on various physical	The assessment procedure consisted of pre and post physical fitness measures selected from the Brockport Physical Fitness Test in two groups: surfing (n = 71) and an unstructured aquatic program (n = 20).	The results demonstrated significant improvements in core strength ($p = 0.00$), upper body strength ($p = 0.00$), flexibility ($p = 0.01$)
Effects of Aquatic Therapy for Children with Autism Spectrum	Güeita-Rodríguez, J., Ogonowska-Slodownik, A., Morgulec-Adamowicz, N., Martín-Prades, M.	The objective of this study was to evaluate the effects of an AT program on social competence and quality of life and to understand	A mixed methods intervention study was conducted among 6 children with ASD and their parents, with two research phases in a	Significant improvement was observed in the physical competence ($p = 0.026$) and important improvements in school functioning and

Disorder on Social Competence and Quality of Life: A Mixed Methods Study	L., Cuenca-Zaldívar, J. N., & Palacios-Ceña, D. (2021).	participant's experiences	concurrent embedded design	aquatic skills, with no adverse events
Activities and Active Mobility of Children – at the Interface of Travel Behavior and Health Research	Stark, J., Skok, M., Müller, C., & Meschik, M. (2024)	In a study, the connection of children's physical activity (PA), active mobility, and emotional wellbeing was investigated	A multi-method approach was applied: For seven days, children (11 to 13) in Lower Austria Data of self-reports and sensors were merged	Overall results show that sensor data helped to complete the picture of children's daily activities to address health behavior related questions.
The Effects of the Learning Model, Skilled Model, and Positive Self-review on the Learning of Front Crawl Swimming in Children	Razavinia, M., Parvinpour, S., & Arsham, S. (2020)	The purpose of this study was focusing on the effects of learning model, skilled model and positive self-review crawl on learning in children aged 9 to 11 years in Alborz Province	Participants of the random and available samples divided into different groups. Thus, Participants of all groups practiced three time in a week which have 20 attempt to practice in every session a	The results indicate the advantage of the three types of model crawl performance and significant difference between groups in the acquisition, retention and transfer test) $p < 0/05$
Swimmers with Down Syndrome Are Healthier and Physically Fit than Their Untrained Peers	Querido, A., Costa, M. J., Araújo, D., Sampaio, A. R., Vilas-Boas, J. P., Corredeira, R., Daly, D., & Fernandes, R. J. (2023)	The aim of this study was to compare the body composition and physical fitness profile of competitive swimmers and moderately active	The Eurofit Special test was applied to a group of competitive swimmers (n = 18) and a group of untrained individuals	Swimmers with Down syndrome exhibited physical fitness levels near to the Eurofit standards
Swimming, better than tennis, develops sensorimotor adaptabilities involved in postural balance in 5-6-year-old children	Barros de Vasconcellos, M & Dos Anjos do Nascimento, J. (2023).	The present study aimed to evaluate the postural balance of young tennis players and young swimming practitioners in static and dynamic conditions.	Thirty-six children (5–6 years old) participated in 3 groups: 12 tennis players, 12 swimming practitioners and 12 controls.	In the EO condition, swimming practitioners and tennis players had a significantly lower ($p < 0.05$) centre of pressure mean velocity (CoPVM) compared to controls in both static and dynamic medial lateral

Results indicated that three months after the intervention, competency levels were either maintained or improved. This suggests that the skills taught during swimming lessons have a lasting impact on children's abilities in the water. By enabling healthy aquatic participation, swimming and water safety programs not only promote physical activity but also contribute to

the overall well-being of children. (Button et al., 2020; George et al., 2024; Singuran et al., 2023)

Parental perceptions regarding the positive impact of visiting blue spaces on their child's mental health were also gathered and analyzed. This finding supports the notion that exposure to blue spaces, such as oceans, lakes, or swimming pools, can have a positive influence on mental health outcomes in children. These insights further emphasize the importance of incorporating aquatic activities as part of a holistic approach to child development. (Willcox-Pidgeon et al., 2021; Barros de Vasconcellos, & Dos Anjos, 2023; Sellés-Pérez et al., 2023)

Balance abilities were another aspect of physical development assessed in the study. Results demonstrated significant improvements in balance performance following both interventions. Another important finding of the study pertains to the prevalence of fear in the water or deep water among the participants. Understanding and addressing fear in the water is crucial for fostering a positive and inclusive environment for all children to participate in swimming and water-related activities. (Razavinia et al., 2020; Singuran et al., 2023; George et al., 2024)

Discussion

The findings of this study provide compelling evidence for the long-term effectiveness of swimming lessons in promoting and maintaining competency levels in children. The findings of this study provide compelling evidence for the long-term effectiveness of swimming lessons

in promoting and maintaining competency levels in children. This underscores the importance of including swimming and water safety programs in educational curricula to enhance aquatic participation and overall well-being in children. (Clapham et al., 2020; Altavilla et al., 2023; Misimi et al., 2023)

By engaging in regular swimming activities, children not only benefit from physical exercise but also develop essential water-related skills that can contribute to their safety and enjoyment in aquatic environments. Incorporating aquatic activities into a comprehensive approach to child development may provide additional opportunities for promoting positive mental health outcomes. By engaging in exercises that challenge balance, such as swimming strokes or water games, children can develop better control over their body movements, leading to improved balance. This finding further supports the notion that swimming programs can play a vital role in enhancing various aspects of physical development. (Ansari et al., 2021; Araiza et al., 2021; Der Rowe, 2023)

The prevalence of fear in the water or deep water among the participants is an important aspect highlighted by this study. Acknowledging and addressing fear is crucial to fostering a positive and inclusive environment for all children to participate in swimming and water-related activities. By understanding the challenges associated with fear in the water, educators and instructors can implement strategies to help children overcome their fears, ensuring their safety, and facilitating their enjoyment of aquatic experiences. This finding underscores the importance of providing appropriate guidance and support to address

individual concerns and promote a positive attitude towards water-based activities.

(Claphamet al., 2020; Güeita et al., 2021; Stark et al., 2024).

Conclusión

In conclusion, this study provides valuable insights into the long-term retention of swimming and water safety skills, the impact of blue spaces on mental health, the development of body schema, balance abilities, and the prevalence of fear in the water among children. The findings support the efficacy of swimming and water activities in promoting physical, psychological, and psychomotor development in children.

These results have implications for the design and implementation of interventions aimed at enhancing swimming skills and overall well-being in children. Future research should continue to explore and refine these interventions to ensure the optimal development and safety of children in aquatic environments.

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Conflictos de intereses

Los autores declaran no tener conflictos de intereses.

Contribución de los autores

Los autores han participado en la redacción del trabajo y análisis de los documentos