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THE RELATIONSHIP BETWEEN THEORY AND PRACTICE IN PHYSICAL EDUCATION

LA RELACIÓN ENTRE LA TEORÍA Y LA PRÁCTICA EN LA EDUCACIÓN FÍSICA

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The relationship between theory and practice in Physical Education

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ABSTRACT

Physical education (PE) practiced in the early stages of life contributes to psychomotor development, promotes healthy lifestyles, and influences metabolic variables. Currently, high levels of sedentary lifestyles prevail, and unhealthy habits significantly impact lifestyle; consequently, the metabolic state of human beings is altered throughout their life cycle. Given the limited information on the associations between these variables, the present study was conducted to analyze the relationships among physical education, psychomotor skills, and lifestyle habits in women and men at the pre-adolescent and adolescent stages in a central region of Mexico. Seven hundred and twenty-four students participated in a representative sample of 19,000 participants from the municipal sports initiation schools of León, comprising two age groups: pre-adolescents (12 to 15 years of age) and adolescents (16 to 19 years of age), of both sexes. Males in the pre-adolescent and adolescent groups had higher values for glucose, cholesterol, low-density lipoproteins, very low-density lipoproteins, and high-density lipoproteins. The physical activity variables were significantly related by a multiple correlation model ($R^2 = 0.49$; $p < 0.05$). Perception of physical activity through physical education had a score range of 4-8 out of 10 points. The psychomotor movement test in the Illinois test yielded values between 40% and 72%, which are considered low. In conclusion, the metabolic variables of glucose and lipids had values unsuitable for their age, and males had the highest values. Participants in sports programs need to have a greater understanding of their metabolic variables, adopt healthy lifestyles, and develop better psychomotor skills from an early stage of life.

Key words: Physical education theory and practice, perception, sports, health, lifestyles

La relación entre la teoría y la práctica en la Educación Física

RESUMEN

La educación física (EP) practicada en las primeras etapas de la vida contribuye al desarrollo psicomotor, promueve estilos de vida saludables e influye en las variables metabólicas. Actualmente, prevalecen altos niveles de un estilo de vida sedentario, y los malos hábitos afectan el estilo de vida; en consecuencia, el estado metabólico de los seres humanos se altera a lo largo de su ciclo de vida. Dada la escasa información sobre las asociaciones en estas variables, el presente estudio se realizó para analizar las relaciones entre las variables de educación física, habilidades psicomotoras y hábitos de estilo de vida en mujeres y hombres en las etapas de preadolescencia y adolescencia en una región central de México. Setecientos veinticuatro estudiantes participaron en una muestra representativa de 19.000 participantes de las escuelas municipales de iniciación deportiva de León, de dos grupos de edad en la etapa de maduración preadolescente (12 a 15 años de edad) y adolescentes (16 a 19 años de edad) de ambos sexos. Los hombres en los grupos preadolescentes y adolescentes tenían valores más altos de glucosa, colesterol, lipoproteínas de baja densidad, lipoproteínas de muy baja densidad y lipoproteínas de alta densidad. Las variables de actividad física estaban significativamente relacionadas por un modelo de correlación múltiple ($R2 = 0,49$; $p < 0,05$). La percepción de la actividad física a través de la educación física tuvo un rango de puntuación de 4-8 sobre 10 puntos. La prueba de movimiento psicomotor en la prueba de Illinois estuvo entre el 40 y el 72 %, valores que se consideran bajos. En conclusión, las variables metabólicas de la glucosa y los lípidos tenían valores de inadecuación para su edad, y los hombres tenían los valores más altos. Es necesario que los participantes en los programas deportivos tengan un mayor conocimiento de sus variables metabólicas, la adopción de estilos de vida saludables y mejores habilidades psicomotoras desde las primeras etapas de la vida.

Palabras clave: teoría y práctica de educación física, percepción, deportes, salud, estilos de vida

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INTRODUCTION

In Mexico, physical education (PE) is defined as a pedagogical discipline that uses body movement for educational purposes to contribute to the integral development of the individual. Its main objectives are to promote health, physical and psychomotor development, and foster social and cultural values (INSP, 2020). According to the Ministry of Public Education (SEP, 2018), PE is a fundamental part of developing life skills, as it promotes learning through motor experiences, strengthening autonomy, teamwork, and physical care. The implementation of the PE curriculum in Mexico faces various challenges. Studies have identified varying levels of effectiveness in its implementation, highlighting factors such as inadequate infrastructure, limited ongoing teacher training, and the limited integration of interactive technologies in classrooms. Significant gaps have been observed between curriculum design and implementation, particularly in certain Mexican regions, where a lack of resources and inadequate teacher training limit the quality of teaching. Linking the theory and practice of PE for scholars and students, several authors and scientific associations (Bailey, R., Hillman, C., Arent, S., & Petitpas, A., 2013; European Commission/EACEA/Eurydice, 2013; Time Magazine Report OMS, 2020; AHKGA, 2022; UNESCO, 2017; Time Magazine Report, 2016) propose considering sports as a potential way to promote active and healthy lifestyles and to develop athletes and. Current approaches prioritize the development of motor skills, critical thinking, and self-management of physical and mental well-being. Sports promote the improvement of fundamental motor skills (coordination, balance, agility, strength, speed, and endurance). Through structured sports games, students develop complex motor skills that allow them to function effectively in various physical situations. Regular practice of sport in educational contexts encourages regular physical activity, which helps prevent chronic non-communicable diseases (diabetes, obesity, cardiovascular diseases) from an early age. School sports strengthen respect for rules, cooperation, self-control, and responsible decision-making. They are also linked to reducing risky behavior in adolescents. Playing sports improves self-esteem, reduces stress, and strengthens social skills such as teamwork and conflict resolution.

In 2015, *The White Book on Physical Education in Mexico (SEP 2015)* was published, based on public policy to guide physical education as a comprehensive promoter of motor skills in their maturation stages from sensory-motor to conditioned physical capacities such as cardiorespiratory endurance,

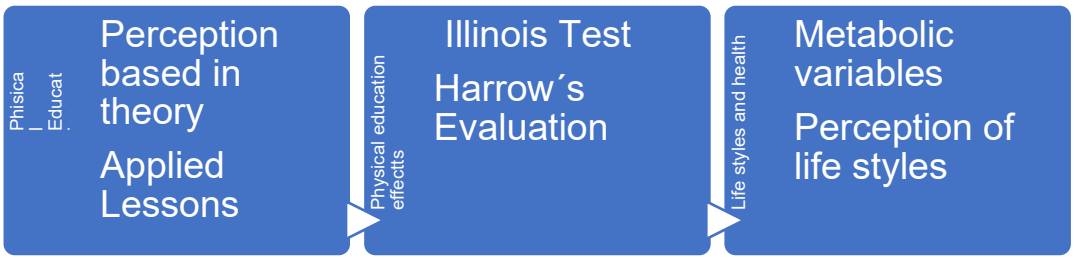
speed, strength and muscular endurance and flexibility, in addition the acquisition the bio, psycho, and social well-being of school children and students through physical education. That was a strategic document that established educational policy in this area. It was formulated by the SEP (Ministry of Public Education) and consolidated during the second decade of the 21st century in response to contemporary health and education challenges. This book establishes five thematic axes that guide physical education teaching in the country: corporeality as the center of learning, motor skills as a manifestation and perception of the human body, integration of meaningful learning, motor diversity, and ethics and values in motor practice. These axes seek to articulate theory with practice, integrating biological, psychological, social, and cultural aspects of human movement.

Despite its importance, although there are theoretical reflections and perception studies on the role of sport in the effectiveness of achieving the objectives of physical education (López-Walle, J., Tristán J, & García-Verazaluce, J., 2020; González-Cabrera, J.L., 2021), there are scanty experimental information that documents the beneficial effects of physical education and sport on school children's health. Thus, the purpose of this study was to assess the effectiveness of incorporating complementary sports programs into the plans and activities of physical education classes for Mexican schoolchildren in terms of metabolic characteristics, psychomotor development, and lifestyle.

METHODOLOGY

This study employed an observational, prospective, cross-sectional, and comparative design (Méndez, 2019). The Bioethics Committee of the Municipal Sports Commission of the municipality of León, Mexico, approved the study. Participants in this research attended sports initiation schools through physical education classes. This elite team consisted of 19,000 participants in municipal sports development programs. Forty-six sports disciplines were practiced in eight extensive sports facilities covering 100 hectares, spread across different parts of the city. To assess the relationships between physical education (perception between theory and practice in the class of PE), psychomotor skills (test of Illinois and taxonomy of psychomotor domain from Harrow´s), and the adoption of healthy status (clinical test and metabolic variables), a randomized voluntary sample of 724 participants was taken. Participants were randomly assigned to three groups, divided into two age groups: pre-adolescents (12 to 15 years of age) and adolescents (16 to 19 years of age), comprising both sexes (n =

181 in each age and sex group). Their physical characteristics are described in the Participant Characteristics section of the Results section. Three kinds of variables were evaluated: The perception of the history of physical activity practice of the participants assessed through a graphic method by semantic visual analog scale (Hernández-Sampieri, R., 2023); the application of the Illinois test of ability, agility and motor skill (Shepard, Jeremy & Dawes, 2014); and health status analyzed through clinical laboratory studies and a 10-item inventory on healthy lifestyles, developed by the authors with content validity, construct validity, validity of results, through split halves and Cronbach's Alpha. They participated in three sessions: At the initial visit, all participants underwent a visual analog scale assessment, a medical history review, and a physical examination. A blood sample was drawn (according to standard procedures) from the cephalic or basilic vein after fasting for 8 to 10 hours and without having engaged in any physical activity for 24 hours. Serum/plasma was processed (according to laboratory procedures) on the same day for analysis of glucose (Gl), triglycerides (TG), total cholesterol (TC), high-density lipoprotein cholesterol (HDL), and low-density lipoprotein cholesterol (LDL). Very low-density lipoprotein cholesterol (VLDL) was calculated using the Fridewald formula (VLDL = TG/2.2) according to international lipid standards (OMS, 2020). In that session, weight (kg) and height (m) were measured and the body mass index (BMI = weight [kg]/height [m2]) was calculated. Descriptive statistics were performed to calculate the mean and standard deviation. A two-way analysis of variance was conducted for the quantitative variables to assess differences in the variance ratio between sexes (F1) and age groups (F2). Post-hoc of Tukey and Newman-Keuls was performed In all cases, the level of statistical significance was set at 95% alpha (Daniel, 2019). The general model of the interrelation of variables is as follows:



RESULTS

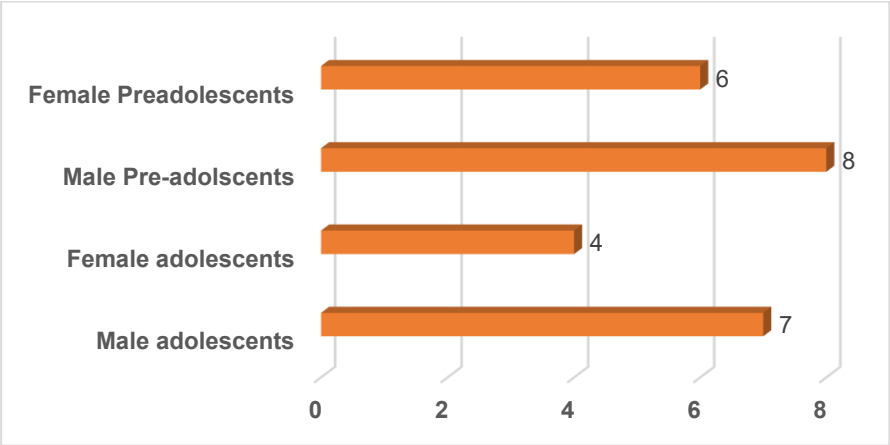
Table 1 shows a significant difference between the sexes of both groups can be seen, and the growth and development of the participants is appreciable. The values are elevated and representative of our country and our Latino population. The metabolic variables are at borderline levels and are consistent with sedentary lifestyles and physical activity levels, despite participating in physical activity programs. Males in both age groups had higher values than females in the comparison groups.

TABLE 1. Participant characteristics. (□±SD)

Variables	**Female**	**Male**	**Female**	**Male**	***p***
Age (Years)	14.00 01.00	14.05+01.20	17.0+01.01	17.3+01.02	*, #,&
Weight (Kg)	58.35 04.13	56.03+02.04	63.03+04.0	73.04+04.02	*, #,&
Height (m)	01.56±03.03	01.66+02.34	01.60+02.02	01.72+02.01	*, #,&
BMI(Kg/m2)	23.03±04.02	22.89+03.34	25.75+03.01	24.75+03.02	*, #,&
Glucose (mmol/l)	03.90±00.33	04.19+01.33	04.20+01.12	04.80+01.16	*, #,&
Cholesterol (mmol/l)	02.90±01.32	0.36+01.20	03.20+0.2.00	03.90+02.20	*, #,&
Triglycerides (mmol/l)	01.01±02.10	01.09+01.50	01.03+02.31	01.12+02.10	*, #,&
HDL-c (mmol/l)	01.65±00.10	01.10+05.01	01.70+00.10	01.30+00.20	*, #,&
LDL-c (mmol/l)	01.60+01.30	01.70+01.40	01.75+0.35	01.80+01.33	*, #,&
VLDL (mmol/l)	00.48+00.30	00.46+00.25	00.50+00.30	00.53+00.28	*, #,&

Symbols: *Difference between preadolescent sexes, # difference between adolescent sexes, &; difference between groups. HDL = High density Lipoproteins; LDL = Low Density Lipoproteins; VLDL = Very-low-density lipoproteins.

FIGURE 1. Shows the perception that participants had about their physical education classes and the importance of having adequate physical fitness in terms of type, frequency, intensity, duration, and volume.



Participants of both sexes expressed high perceptions of the need for quality physical education, which will impact their future growth and development. It is noteworthy that this perception tends to decline with age, particularly among females.

FIGURE 2 Values in the Illinois test as an integration of physical education.

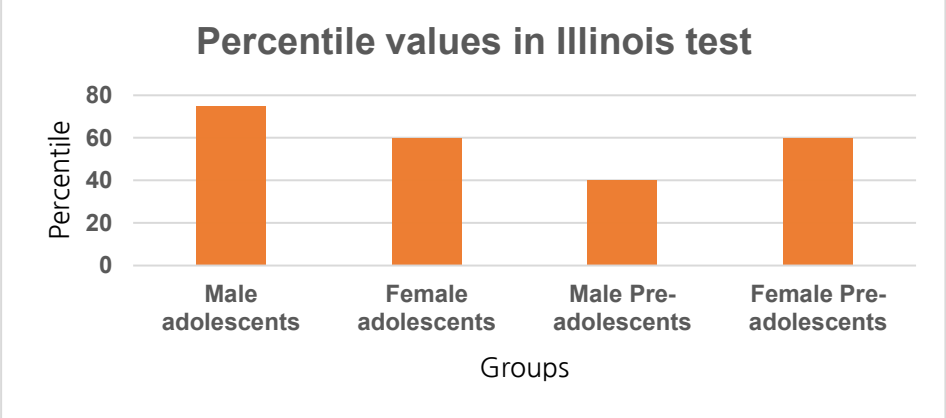


Table 2, shows that the Illinois test showed low values, located in the 40th to 60th percentiles (Cureton, 1940). There is a decrease in this psychomotor quality as age increases, attributed to sedentarism and lack of greater activity in the gross motor function of the participants (Figure 2).

The matrix of multiple correlation shows as follow (R2 = 0.49; p <0.05):

Variables	Activity	Psychomotricity	Habits	Health
Activity	X	0.60	0.49	0.48
Psycomotricity	0.60	X	0.54	0.51
Habits	0.49	0.54	X	0.63
Health	0.48	0.51	0.63	X

DISCUSSION

The results of this study clearly demonstrate the relationship between physical education, psychomotor skills, and the development of healthy habits and lifestyles through sports practice. In our opinion, physical education is the first significant step toward adopting lifelong healthy lifestyles. It is the first contact with personal and family education (Camacho, A., et al 2006, Di Maglie, A., 2022 Pagani et al., 2010; Pérez-Herrera, Cruz-López, 2018). The current state of knowledge is overwhelming, stating that without adequate physical education from the early stages of life (Battaglia, G., 2020; Di Maglie, A., 2022; Pagani, L., 2010), risky behaviors develop that will affect prudent and positive lifestyle habits in the long term (Guerrero, M, Rivera, AE., 2020). In support of the above, Toporowski et al. (2003) suggest that educating children in an environment where both motor and cognitive skills are encouraged can improve academic performance. Unfortunately, in recent years, there have been changes in the lifestyles of various age groups, especially in late childhood. Children today lead an increasingly sedentary lifestyle, characterized by time spent playing video games, using computers/smartphones, and watching television.

The effects experienced in the past two decades have been harmful, as demonstrated by our study, which shows a statistically significant decrease in the level of physical activity, although the importance of physical education and the association between increased metabolic risk due to sedentary lifestyle and diet remain a matter of perception. (Di Maglie, A.; Marsigliante, S.; My, G.; Colazzo, S.; Muscella, A. , 2023). The Illinois test allows the general assessment of psychomotor development. It has been used as a complementary test to assess other conditioned physical capacities,

a determinant of the efficacy of PE. As a whole, the perception of physical education and the state of health allow us to identify the effectiveness of physical education. The correlation between PE and Sports ($R2 = 0.49$; $p < 0.05$) practice generates a powerful link between the theory and practice bridge.

CONCLUSIONS

These data reflect the need to strengthen PE from basic education, promoting physical activity habits from an early age, and sports could be a transcendental factor. There is a strong connection between theory and practice in physical education, particularly in its potential to develop athletes and promote active and healthy lifestyles. In Mexico, the hours allocated to physical education vary depending on the educational level and institution. In many cases, only 45 to 60 minutes per week are taught, which is lower than international recommendations. This discrepancy has led to legislative proposals to increase the number of weekly hours dedicated to physical education in schools.

REFERENCES

Active Healthy Kids Global Alliance (AHKGA). (2022). Boleta de Calificaciones Mexicana 2022. https://www.activehealthykids.org/wp-content/uploads/2024/02/Mexico-report-card-short-form-2022.pdf

Bailey, R., Hillman, C., Arent, S., & Petitpas, A. (2013). *Physical activity: An underestimated investment in human capital?*. Journal of Physical Activity and Health, 10(3), 289–308. https://doi.org/10.1123/jpah.10.3.289.

Battaglia, G., Giustino, V., Tabacchi, G., Alesi M., Galassi, C., Modica, C., Palma, A., Bellafiore, M., (2020). Effectiveness of a Physical Education Program on the Motor and Pre-literacy Skills of Preschoolers From the Training-To-Health Project: A Focus on Weight Status. Front Sports Act Living. 2020 16;2-57.

Camacho, A., Noguera, M., Buñuel, P., Domínguez, R., Larrubia, J. & Delgado, M. (2006). The learning assessment in physical education. The differences according to educative level. European Journal of Human Movement, (17), 71-95.

Di Maglie, A.; Marsigliante, S.; My, G.; Colazzo, S.; Muscella, A (2022). Effects of a physical activity intervention on schoolchildren fitness. Physiol. Rep.

González Cabrera, J. L. (2021). Programas de estudio de Educación Física en México: Una prioridad postpandemia. COMIE.https://www.comie.org.mx/congreso/memoriaelectronica/v16/doc/1508.pdf

Daniel, W: Biostatistics (2018). 4th Edition. McGraw-Hill Editorial

European Commission/EACEA/Eurydice. (2013). *Physical Education and Sport in European Schools*. Eurydice Report. Luxembourg: Publications Office of the European Union. https://op.europa.eu/en/publication-detail/-/publication/6b5b664e-8b7c-4c9a-81ab-9a1cde3f5653

Harrow, A., 1972. Taxonomy domain. 1th edition. Editorial McKay. USA

Hernández-Sampieri, R., 2023. Research Method. 2th edition. McGraw-Hill.

Instituto Nacional de Salud Pública (INSP). (2020). *Actividad física y salud en niños y adolescentes mexicanos*. INSP. https://www.insp.mx.

López-Walle J, Tristán J, & García-Verazaluce J, 2020). Efectos del ejercicio físico en la salud metabólica de adolescentes mexicanos. *Revista de Ciencias del Deporte*, 7(1), 25–39.

Marsigliante, S, Gómez-López, M, Muscella, A (2023). Effects on Children's Physical and Mental Well-Being of a Physical-Activity-Based School Intervention Program: A Randomized Study. Int. J. Environ. Res. Public Health 2023, 20, 1927.

Méndez, I,. The research protocol (2018). 18th edition. Editorial Trillas.

Olympic Association Committee (OAC) (2024). Australia's shocking Olympic truth revealed. https://www.news.com.au/sport/olympics/research-shows-truth-of-australias-olympic-sport-participation/news-story.

Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (UNESCO). (2017). Recomendaciones de políticas para la prestación de educación física de calidad en el nivel básico del sistema educativo mexicano. en.unesco.org

Organización Mundial de la Salud. (2020). *Directrices sobre actividad física y hábitos sedentarios*. OMS. https://www.who.int/publications/i/item/9789240015128.

Pagani, L. S, Fitzpatrick, C., Barnett, T. A, and Dubow E. (2010). Prospective associations between early childhood television exposure and academic, psychosocial, and physical well-being by middle childhood. Arch. Pediatr Adolesc Med 164, 425-431.

Shepard, Jeremy & Dawes, Jay & Jeffreys, Ian & Spiteri, Tania & Nimphius, Sophia. (2014). Broadening the view of agility: a scientific review of the literature. Journal of Australian Strength and Conditioning. 22. 6-30.

Secretaría de Educación Pública. (2018). *Plan y programas de estudio. Educación básica: aprendizajes clave para la educación integral*. SEP. https://www.gob.mx/sep.

Secretaría de Educación Pública (SEP). (2015). *Libro Blanco de la Educación Física*. SEP.

Time Magazine Report. Analysis of China's sports success. (2016). Inside the System That Turned China into the Most Dominant Divers in the World. https://time.com/4442329/china-diving-rio-2016-olympics.

Tomporowski, P. D., Davis, C. L., Miller, P. H., & Naglieri, J. A. (2008). Exercise and Children's Intelligence, Cognition, and Academic Achievement. Educational Psychology Review, 20, 111–131. https://doi.org/10.1007/s10648-007-9057-0

USOPC. 2025. Why does the United States dominate world sports? Retrieved https://as.com/us/us/2020/02/06

Valadez, M. del R., & López, R. G. (2019). Percepción de los estudiantes de secundaria sobre la clase de educación física. *Revista Mexicana de Educación Física*, 11(2), 34–45.