RECAFIS
Revista Científica: Acondicionamiento Físico y Salud Social

VOL. 1 No.1

Enero – junio 2026

Effects of a Physical Training Program on the physical capabilities of University Youth

Efectos de un Programa de Entrenamiento Físico en las capacidades físicas de Jóvenes Universitarios

Richard Baldomero Corozo Palma
Richard.corozop@ug.edu.ec
Universidad de Guayaquil
ORCID: 0000-0002-5080-9022

Lcdo. Edgar Hinostroza Carriel, PhD.
edgar.hinostrozac@ug.edu.ec
Universidad de Guayaquil
ORCID: 0000-0002-8297-0144

DOI: https://doi.org/10.53591/recafis.v1i1.2915

Abstract

Introduction: Physical training is an important part of university students' overall growth, especially for those who play sports or do other fun things. Objective: To examine the impact of a physical training regimen on the physical abilities of young university students. Methodology: This descriptive study will examine the impact of physical training on the physical capacities of students from the Faculty of Physical Activity Sciences at the University of Guayaquil, employing non-probabilistic convenience sampling and assessing flexibility, strength, speed, power, and endurance through standardized tests. Results: Some young university students perform adequately on certain physical tests; however, a substantial number necessitate a more targeted training regimen to markedly enhance their physical abilities. Discussion: Training programs that help students become more flexible, stronger, faster, and more durable can not only help them do better in sports, but they can also help them feel better overall.
Keywords: Training program, skills, physical training, physical abilities

Resumen

Introducción: El entrenamiento físico es una parte importante del crecimiento integral de los estudiantes universitarios, especialmente para aquellos que practican deportes o realizan otras actividades recreativas. Objetivo: Examinar el impacto de un régimen de entrenamiento físico en las capacidades físicas de los jóvenes estudiantes universitarios. Metodología: Este estudio descriptivo examinará el impacto del entrenamiento físico en las capacidades físicas de los estudiantes de la Facultad de Ciencias de la Actividad Física de la Universidad de Guayaquil, empleando un muestreo no probabilístico por conveniencia y evaluando la flexibilidad, fuerza, velocidad, potencia y resistencia a través de pruebas

estandarizadas. Resultados: Algunos jóvenes universitarios se desempeñan adecuadamente en ciertas pruebas físicas; sin embargo, un número considerable necesita un régimen de entrenamiento más específico para mejorar notablemente sus capacidades físicas. Discusión: Los programas de entrenamiento que ayudan a los estudiantes a volverse más flexibles, fuertes, rápidos y resistentes no solo pueden ayudarles a mejorar en los deportes, sino que también pueden ayudarles a sentirse mejor en general.
Palabras clave: Programa de entrenamiento, habilidades, entrenamiento físicos, capacidades físicas

Introduction

Physical training is an essential component for the holistic development of university students, especially those who participate in sports or recreational activities. Physical activity is fundamental; it's not just about developing the abilities needed to maximize performance in daily life (Bernal et al., 2014). Aspects such as speed, agility, coordination, and endurance also play a crucial role in the effective execution of movements.

Well-developed abilities allow young people to generate the power necessary to achieve greater satisfaction in physical or sporting activities. However, the speed of movement execution is equally important; a throw or shot on goal, or any physical activity, depends not only on how much force can be applied, but also on how quickly that force can be applied. Therefore, training must be multidimensional, incorporating exercises that develop all relevant physical abilities (Vera & Villafuerte, 2025).

Strength training is a stimulus to muscle tissue, involving exercises of maximum or near-maximum tension. This type of training can involve weights, compound exercises, and plyometrics, all of which are crucial for improving maximum strength and power (Orquín et al. 2009). However, for university students, these exercises should be complemented with training to improve speed and sports technique, or with regular physical activity. This can include sprints, agility drills, and exercises to refine the mechanics of sports technique (Rodríguez et al. 2020).

Furthermore, endurance training is fundamental for athletes to perform at their best in long-duration events. Muscular and cardiovascular endurance helps pitchers recover faster between pitches and maintain the quality of their throws over time. "Including strength, speed, and endurance training circuits can be an effective way to develop a well-rounded athlete."

Developing these capacities not only improves athletic performance but also contributes to students' confidence and motivation. As athletes see improvements in their strength, speed, and technique, their self-esteem rises, motivating them to push themselves harder in training and competition. This personal growth is fundamental to the holistic development of students as athletes and as individuals (Pérez et al. 2024).

The University of Guayaquil, through its Faculty of Physical Activity Sciences, is implementing an innovative physical training program designed for young students seeking to improve their athletic performance and overall well-being. This comprehensive program works on all physical capacities, such as strength, speed, agility, and endurance, to enhance athletic performance (Palicio et al. 2022). With a multidisciplinary approach, participants are guided through practical sessions that integrate technical and physical training, developing athletic skills, mental health, and personal motivation. Furthermore, the program incorporates workshops on nutrition and injury prevention, equipping students with the tools to achieve their athletic and academic goals. Ongoing program evaluation allows for necessary adjustments to ensure its effectiveness and relevance for students (Navarro, 2004).

The objective of this research was to determine the effects of a physical training program on the physical capabilities of university students. Objective: To determine how the use of specific training strategies can affect the physical and technical performance of the participants. Through the collection of quantitative and qualitative data, the aim is to understand the influence of physical capacity development on the improvement of physical fitness and to provide evidence-based recommendations that can help coaches, physical education teachers, and athletes improve their training programs.

Materials y methods

This descriptive non-experimental study is being carried out at the Faculty of Physical Activity Sciences of the University of Guayaquil.

Participants

The study population will consist of 41 university students enrolled in the Physical Activity Pedagogy program (27 men and 14 women) during the 2024 semester. Participants will be eligible to study if they

regularly engage in physical activity and are free of physical problems such as injuries or illnesses.

A non-probability convenience sampling method will be used, selecting those who voluntarily enroll in the training program and meet the participation criteria. Various measurement instruments will be used to assess physical capabilities, including tests of flexibility, strength, speed, power, and endurance.

Table 1

Sample		Ages
Men	22	18 – 26 years
Women	10	19 – 24 years

Source: Own elaboration

Los datos recolectados se analizarán utilizando estadísticas descriptivas para resumir las características de la muestra y se presentarán en tablas y gráficos para facilitar la interpretación. Este enfoque permitirá obtener una visión clara de los efectos del entrenamiento físico en los estudiantes, identificando áreas de mejora y recomendando estrategias para optimizar su rendimiento.

Resultados

En esta sección se presentan los resultados del estudio sobre los efectos de un programa de entrenamiento físico en las capacidades físicas de jóvenes universitarios.

Table 2

60-meter speed test	
Excellent	<7 segundos
Good	7 – 8 segundos
Regular	8.1 – 9 segundos
Needs improvement	+ 9 segundos

Source: Own elaboration

Table 3. 60-meter speed test

		Frequency	Percentage	Percentage Valid	Cumulative Percentage
Valid	Good	2	4,5	4,5	4,5
	Average	12	27,3	27,3	31,8
	Below average	30	68,2	68,2	100,0
	Total	44	100,0	100,0	

Source: Own elaboration

Analysis of the 60-meter sprint test results reveals a clear distribution of performance among the participants. Of the 44 students evaluated, only 4.5% (2 students) achieved a "Good" performance, indicating that only a minority achieved outstanding speed in the test. On the other hand, 27.3% (12 students) were classified as "Average," suggesting that these students have a speed at the average level for the group, demonstrating acceptable but not exceptional performance.

However, the most alarming finding is that 68.2% (30 students) scored "Below Average." This high percentage may indicate a concern regarding the physical condition and speed of the majority of students in the study group. The concentration of students in this category suggests that the physical conditioning program at the Faculty of Physical Activity Sciences could be more focused on improving speed and overall athletic performance.

The cumulative percentages also provide a clear picture: 31.8% of the students are in the average or better category, while 68.2% fall below this threshold, indicating a need for intervention to raise the speed performance level of the majority of participants (Ramírez et al., 2004).

In conclusion, these results suggest that, although some students achieve considerable speed, a large portion of the group's performance needs improvement. This could motivate those responsible to develop specific training programs and strategies to increase students' speed and overall fitness, in order to optimize their performance in sports activities (Ocampo et al., 2018).

Table 4

Long jump	
Excellent	+250 meters
Good	2 – 249 metros
Average	170 – 199 kg
Below average	< 170 kg

Source: Own elaboration

Table 5 long jump test

		Frequency	Percentage	Percentage Valid	Cumulative Percentage
Valid	Good	11	25,0	25,0	25,0
	Average	18	40,9	40,9	65,9
	Below average	15	34,1	34,1	100,0
	Total	44	100,0	100,0	

Source: Own elaboration

In the long jump, the results were interestingly distributed among the participants. Of the 44 students evaluated, 25.0% (11 students) scored "Good," meaning they performed very well in this event. This percentage indicates that most students are suited for the long jump, which is beneficial for their athletic training and development.

In contrast, 40.9% (18 students) were classified as "Average," implying that these students are achieving acceptable, though not exceptional, performance. This group represents the largest proportion of participants, suggesting that a significant number of students are at an intermediate level, which could be improved with more specific and focused training (Paris et al., 2020).

Finally, 34.1% (15 students) scored "Below Average." This percentage is significant and highlights the need for attention and potential intervention to improve the long jump performance of this group of students. The presence of nearly a third of the group in this category suggests areas for improvement that could be addressed through personalized training programs focused on jumping techniques, explosive power, and overall fitness.

The cumulative percentage indicates that 65.9% of the students are in the average or better category, which is encouraging. However, the fact that 34.1% are below average highlights an opportunity to implement improvement strategies that can help raise the group's overall performance.

While some students demonstrate solid long jump performance, a significant proportion require additional attention. This could motivate coaches and program managers to design interventions focused on increasing jumping ability and optimizing the athletic performance of all students, especially those in the average and below-average categories (Gómez et al., 2024).

Table 6

Flexión de codo	
Excellent	+15 repeticiones
Good	12 – 14 repeticiones
Average	8 – 11 repeticiones
Below average	< 8 repeticiones

Source: Own elaboration

Table 7 Elbow flexion test

		Frequency	Percentage	Percentage Valid	Cumulative Percentage
Valid	Excellent	27	61,4	61,4	61,4
	Good	9	20,5	20,5	81,8
	Average	6	13,6	13,6	95,5
	Below average	2	4,5	4,5	100,0
	Total	44	100,0	100,0	

Source: Own elaboration

The C15 Flexion tests yielded positive results. Of the 44 students evaluated, 61.4% (27 students) achieved an "Excellent" rating, demonstrating that the majority have mastered this test. Furthermore, 20.5% (9 students) were categorized as "Good," indicating that almost all students are at a good level.

Only 13.6% (6 students) were at an "Average" level, and only 4.5% (2 students) were "Below Average." This indicates that most students are performing well in flexibility and strength.

These results are good and demonstrate the students' overall fitness level. However, there is always room for improvement, especially for those who require an extra boost in their training (Peinado & Mora, 2024).

Table 8

Abdominales 15 segundos	
Excellent	+18 repeticiones
Good	14 – 17 repeticiones
Average	10 – 13 repeticiones
Below average	< 10 repeticiones

Source: Own elaboration

Table 9 prueba de Abdominales_15 segundos

		Frequency	Percentage	Percentage Valid	Cumulative Percentage
Valid	Excellent	6	13,6	13,6	13,6
	Good	15	34,1	34,1	47,7
	Average	19	43,2	43,2	90,9
	Below average	4	9,1	9,1	100,0
	Total	44	100,0	100,0	

Source: Own elaboration

The results of the abdominal test show a varied distribution among the 44 students evaluated. Only 13.6% (6 students) achieved an "Excellent" rating, indicating that a small portion of the group has outstanding performance. 34.1% (15 students) were classified as "Good," suggesting they demonstrated acceptable physical ability.

43.2% (19 students) fell into the "Average" category, representing the largest proportion of the group and suggesting that many students have a performance level that can be improved. Finally, 9.1% (4 students) were "Below Average," indicating that a small percentage require additional attention.

Although a significant number of students performed well, the majority are at an average level. This suggests the need to implement specific training programs to help improve abdominal ability and, more generally, the students' physical fitness (Carrillo & Aguilar, 2020).

Table 10

Resistance 1500 meters	
Excellent	<3.45 minutos
Good	3.46 – 4.15 minutos
Average	4.16 – 5 minutos
Below average	> 5 minutos

Source: Own elaboration

Table 11. 1500 meter Endurance Test

		Frequency	Percentage	Percentage Valid	Cumulative Percentage
Valid	Excellent	3	6,8	6,8	6,8
	Good	1	2,3	2,3	9,1
	Average	30	68,2	68,2	77,3
	Below average	10	22,7	22,7	100,0
	Total	44	100,0	100,0	

Source: Own elaboration

In the 1500-meter endurance test, the results among the 44 students were widely dispersed. Only 6.8% (3 students) achieved an "Excellent" rating, demonstrating that very few have mastered this test. Similarly, only 2.3% (1 student) achieved a "Good" rating, showing that few students exceed the acceptable level.

On the other hand, the majority, 68.2% (30 students), fell into the "Average" category, indicating that many students achieve acceptable endurance but still have room for improvement. However, an alarming 22.7% (10 students) are "Below Average," demonstrating that a considerable percentage need to improve their strength training.

In conclusion, the results indicate that most students are average, but endurance needs improvement among the students, especially those below average. A specific training program could improve overall performance in this area (Guaillas et al. 2024).

Discussion

In the Flexion test, the results show good performance among the students evaluated, with 61.4% achieving an "Excellent" rating. This positive result indicates that most university students have good flexibility, which is important for many sports activities and for overall health (Oña & Cadena, 2025). Comparing these findings with the literature, it is found that an adequate level of flexibility is associated with a lower risk of injury and better performance in sports involving large,

controlled movements (Calderón & Loaiza, 2023).

However, the fact that 4.5% of students scored "Below Average" highlights the need for specific training programs for students who do not meet the expected standards. This could make a difference in their physical capacity and prevent future health problems. Furthermore, the 13.6% of students categorized as "Average" also represent a group that could improve in developing flexibility and strength, as indicated by Acevedo (2023).

It is important to know that physical training not only improves physical capacity but can also enhance students' confidence and motivation. Improved performance in tests like the push-up can influence young people's self-esteem, which can promote participation in physical and sporting activities (Ávila et al., 2022).

However, Solano (2023) clarifies that the study's limitations, such as sample size and potential heterogeneity in training methods, must be considered. These factors may affect the generalizability of the results. It is recommended that future research involve a larger number of participants and analyze the effect of different types of flexibility training programs on other physical capacities.

In conclusion, the push-up test results reaffirm the need for a comprehensive approach to the physical preparation of university students. Flexibility and strength training interventions can improve athletic performance and the overall well-being of students. The University of Guayaquil should consider these implications in future health and physical activity initiatives.

Conclusion

The results obtained in the tests demonstrate the need to develop comprehensive training for university students, as 61.4% obtained an "Excellent" rating, demonstrating good physical condition, which is essential for their health and athletic performance.

However, the fact that 4.5% of students were "Below Average" and 13.6% were "Average" reveals the need for specific training programs to develop these skills. Furthermore, the positive effect of training on students' confidence and motivation supports the promotion of participation in physical activity. Therefore, the University of Guayaquil should implement programs focused on improving flexibility and

strength, considering the limitations of the study and the need to further investigate the effect of different training programs on students' overall well-being.

References

Bernal-Reyes, F., Peralta-Mendívil, A., Gavotto-Nogales, H. H., & Placencia-Camacho, L. (2014). Principios de entrenamiento deportivo para la mejora de las capacidades físicas. *Biotecnia, 16*(3). Obtenido de https://www.redalyc.org/pdf/6729/672971121007.pdf

Navarro Valdivieso, F. (Junio de 2004). Entrenamiento adaptado a los jovenes. *Revista de Educación*(335). doi:http://motricidadhumana.com/entrenamiento_adaptado_a_jovenes_F_Navarro_Valdivieso.pdf

Oña-Tacan, E. J., & Cadena-Peñafiel, T. J. (Marzo de 2025). Desarrollo de capacidades físicas en estudiantes de Entrenamiento deportivo en el Ecuador: Un análisis de caso comparativo. *Polo del Conocimiento, 10*(3). doi: https://doi.org/10.23857/pc.v10i3.9191

Ávila Manríquez, F. d., Méndez Ávila, J. C., Silva Llaca, J. M., & Gómez Terán, O. Á. (Febrero de 2022). Actividad física y su relación con el rendimiento académico. *RIDE. Rev. Iberoam. Investig. Desarro, 12*(23). doi:https://doi.org/10.23913/ride.v12i23.1030

Calderón Jaramillo, J. S., & Loaiza Dávila , L. E. (Noviembre de 2023). Los juegos de acción gamificados en las capacidades físicas condicionales de estudiantes de bachillerato. *Polo de Conocimiento, 8*(11). doi:10.23857/pc.v8i11.6226

Carrillo Linares, E., & Aguilar Hernández, V. (Oct de 2020). El desarrollo de las capacidades físicas del estudiante de Mecánica desde la Educación Física. *Rev. Mendive, 18*(4). Obtenido de http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1815-76962020000400794#:~:text=En%20el%20presente%20art%C3%ADculo%20se%20realiz%C3%B3%20un%20estudio,mentalmente%20para%20enfrentar%20los%20retos%20de%20la%20vida.

Gómez-Rossel, O., & Merellano-Navarro, E. (2024). Efectos del entrenamiento concurrente en indicadores de condición física y calidad de vida de adultos sanos. *Retos*(54). doi:10.47197/retos.v54.102244

Guaillas García, J. C., Berrú Torres, C. P., Narváez Galván, E. F., Cueva Jiménez, O. V., Ochoa Granda, E. G., & Cajilima Vega, V. A. (Enero de 2024). El Acondicionamiento de las Capacidades Físicas, Fuerza, Resistencia, Velocidad y Flexibilidad, Orientado a la Salud en los Docentes de Educación Física en el Ecuador. *Ciencia Latina: Revista Multidisciplinar, 8*(1). doi: https://doi.org/10.37811/cl_rcm.v8i1.10425

Malla Acevedo, A. L. (2023). Actividad física y su influencia en el rendimiento académico de estudiantesuniversitarios: Revisión

sistemática. *Mentor Revista de Investigación Educativa y Deportiva, 2*(5). doi:https://doi.org/10.56200/mried.v2i5.5694

Ocampo, N. V., & Ramírez-Villada, j. F. (Julio de 2018). El efecto de los programas de fuerza muscular sobre la capacidad funcional. Revisión sistemática. *Rev. Fac. Med, 66*(3). doi: http://dx.doi.org/10.15446/revfacmed.v66n3.62336

orquín castrillóna, F. J., torres-luque, G., & Ponce de león, F. (Marzo de 2009). Efectos de un programa de entrenamiento de fuerza sobre la composición corporal y la fuerza máxima en jóvenes entrenados. *apunts med esport*(164). Obtenido de https://repositorio.ucam.edu/bitstream/handle/10952/2994/Efectos_fuerza_jovenes%20entrenados.pdf?sequence=1

Palicio Mayora, R., Rodríguez-Martínez, D., & León-Zarceño, E. M. (2022). Programas de Intervención Psicológica con atletas para la mejora del rendimiento: una revisión actual. *Revista de Psicología Aplicada al Deporte y al Ejercicio Físico, 7*(1). doi:https://doi.org/10.5093/rpadef2022a6

París-Pineda, O. M., Alvarez-Rey, N. E., & Cárdenas-Sandoval, L. K. (Febrero de 2020). Estructura de un programa de ejercicio físico dirigido a escolares dirigido a escolares. *Rev. salud pública, 22*(1). doi:https://doi.org/10.15446/rsap.V22n1.84216

Peinado Rincon, E., & Mora Murillo, C. A. (Enero de 2024). Entrenamiento de la fuerza en niños y adolescentes: Una Revisión sistemática años 2018-2022. *Revista digital: Actividad Física y Deporte., 10*(1). doi:10.17979/sportis.2024.10.1.9759

Pérez Córdova, H. A., Hilt, J. A., de Trinidad Castro, F. V., & Murillo Coronado, H. D. (2024). Impacto de un programa de entrenamiento de fuerza y resistencia en un grupo de estudiantes universitarios mexicanos. *Revista Internacional de Estudios en Educación, 24*(2). doi: https://doi.org/10.37354/riee.2024.243

Ramírez, W., Vinaccia, S., & Ramón Suárez, G. (Agosto de 2004). El impacto de la actividad física y el deporte sobre la salud, la cognición, la socialización y el rendimiento académico: una revisión teórica. *Revista de Estudios Sociales*(18). Obtenido de http://www.scielo.org.co/pdf/res/n18/n18a08.pdf

Rodríguez-Delgado, A., Hernández, M., Hernández, L., Gil, J., Sepúlveda, E., & Rebolledo-Cobos, R. (Enero de 2020). Efectos de un programa estructurado de entrenamiento funcional sobre la condición física saludable de adultos jóvenes de Barranquilla (Colombia). *Biociencias, 15*(1). doi:. https://doi.org/10.18041/2390-0512/biociencias.1.6380

Solano Armenta, Y. S. (Febrero de 2023). La actividad física en estudiantes universitarios. *Psic-Obesidad, 12*(45). doi: https://doi.org/10.22201/fesz.20075502e.2022.12.45.84862

Vera Zambrano, J. F., & Villafuerte Alvarez, C. A. (Enero de 2025). Los programas para la actividad física en adolescentes: Una revisión sistemática. *Horizontes. Revista de Investigación en Ciencias de la Educación, 9*(36). doi:https://doi.org/10.33996/revistahorizontes.v9i36.932