

## Physical And Anthropometric Indicators In Police Officers Of The Advanced GIR Course Of The National Police

Juan Israel Linares Ramírez<sup>1</sup> , Jorge Alberto Molina Freile<sup>2\*</sup>

<sup>1</sup> *Lic. en Educación Física, Universidad de las Fuerzas Armadas. ESPE. Cptn. Policía Nacional. Ecuador.*  
[jilinares@espe.edu.ec](mailto:jilinares@espe.edu.ec). Orcid: <https://orcid.org/0000-0002-9627-7404>.

<sup>2\*</sup> *Lic. en Educación Física, Universidad de las Fuerzas Armadas. ESPE. Cptn. Policía Nacional. Ecuador.*  
[jamf3911@gmail.com](mailto:jamf3911@gmail.com) Orcid: <https://orcid.org/0000-0002-3154-6116>.

### ABSTRACT

The National Police of Ecuador conducts the Intervention and Rescue Group (GIR-Grupo de Intervención y Rescate); For their activities, they must maintain an adequate physical and academic appearance for the performance of their duties, in their courses physical, medical, psychological, and academic tests are required. Therefore, the objective was to determine physical and anthropometric indicators in the first phase of the selection process in the advanced course of the GIR of the National Police; applying descriptive - explanatory research of correlational order, of quantitative type. Information was obtained through physical tests, with a population of 40 policemen and a sample of 17 policemen, to whom a battery of tests was applied, generating three evaluations during the realization of the first phase of the course that had a duration of 8 weeks. The results obtained give an average age of 24 years, and actual weight of 63.20 kg, with a fat weight of 11.75% and a muscle weight of 47.27%, which gives a mesomorphic body composition, which is ideal for police personnel; the tests with better performance were the dominated, with an increase of 40% in the 8 weeks of hard work, and the climbing test at the end, with a (-35%) i.e., it improved by lowering the times from 17 seconds to 11 seconds; concluding that it is necessary to apply these tests periodically, improving the order of the structure of the courses, not being necessary any expense for the institution by having the adequate infrastructure to carry out these courses.

**KEYWORDS:** Anthropometric, police; physical test; GIR

### RESUMEN

La Policía Nacional de Ecuador, cuenta con el Grupo de Intervención y Rescate (GIR), por sus actividades deben mantener un aspecto físico y académico idóneo para su desempeño, en sus cursos se exigen pruebas físicas, médicas, psicológicas y académicas; por lo tanto, se planteó como objetivo determinar indicadores físicos y antropométricos en la primera fase del proceso de selección en el curso avanzado GIR de la Policía Nacional; aplicando una investigación descriptiva – explicativa de orden correlacional, de tipo cuantitativa, se obtuvo información por medio de los test físicos, con una población de 40 policías y una muestra de 17 policías; a los cuales se les aplicó una batería de pruebas, generando tres evaluaciones durante la implementación de la primera fase del curso que fue de 8 semanas; los resultados obtenidos dan una media de edad de 24 años, del peso real 63.20 kg, con un peso graso de 11.75% y un peso muscular de 47.27%, con una composición corporal mesomórfica, que es la idónea para el personal de la policía; las pruebas con mejor desempeño fue las dominadas, con un incremento del 40% en las 8 semanas de trabajo fuerte, y la prueba de trepar al cabo, con un (-35%) es decir que mejoró bajando los tiempos de 17 segundos a 11 segundos; concluyendo que es necesario aplicar estos test de forma periódica, mejorando el orden de la estructura de los cursos, sin necesidad de gastos para la institución al tener la infraestructura adecuada para la realización de estos cursos.

**PALABRAS CLAVE:** Antropometría; policía; pruebas físicas; GIR

## I. INTRODUCTION

Worldwide there are institutions in charge of control and public order in each country, in which academic and physical preparation with a high level of demand is essential so that the performance of its members is adequate.

Thus, there are several studies on the requirements to become a member of these institutions, as well as the type of physical tests that members of the police in different countries in Europe and the Americas must undergo.

Martin Sanjuan (2021) mentions in his article in the Spanish newspaper *As.com* that the State Security Forces and Corps have different psychological and physical requirements according to the place they want to enter, considering different scales for both men and women. In the case of joining the SOG (Special Operations Group), in addition to being a police officer, it is required to have a type B driver's license and pass physical tests such as speed of 50 meters, the endurance of 3000 meters within the established time, swimming 50 meters in 56 seconds, elbow bending and vertical jump of 53 centimeters.

Likewise, Sampablo (2018) points out in the Protocol of Physical Tests for Police Promotion established by the National Experimental University of Security in Venezuela, that thematic area should be considered such as physical capacities or qualities (strength, endurance, speed, and flexibility), Level of physical fitness (medical tests), and Body Mass Index (BMI).

In the same context, MINDEFENSA (2021) points out that to be part of the Special Operations and Antiterrorism Commands (COPEs), they must meet requirements such as being physically prepared for long trips with 25 kilos of weight on their back, as well as the academic, cognitive and psychological part of the police officer who cannot be older than 35 years old.

Cruz Beltrán (2010) points out in his research that for the National Police of Colombia and the COPEs, the rigorous fulfillment of the above-mentioned requirements by the COPEs has the objective

of identifying those who have the suitable competencies to turn the institution into their life project.

Similarly, in Chile there is the Special Police Operations Group (GOPE) of Chile, according to Carabineros (2021), it is the group of "Police Commands of Carabineros de Chile that develop and execute special police operations throughout the country. Among them are bomb disposal, location, and tracking of bombs and explosives, the rescue of people or corpses from places of difficult access, raids, and assaults. Therefore, for the selection of its members, balanced, disciplined individuals of great operational capacity are required, in permanent availability, and capable of performing different functions to intervene quickly and successfully. The regime of the students of the GOPE Course carried out in this Department allows the entrance of Officers and NCOs under the internship system, and the duration of the course is 13 months and is divided into two semesters" (p.1).

According to RPP News (2016), in Peru, the SUAT is an elite unit that the police employ against crime, organized crime, and radical groups, who are generally equipped with long-range weapons. It is an elite group focused on close combat, which goes when required, the duration of the course is 5 months.

Likewise, in Brazil, there is the Military Police of Paraná, (2021) which has the Special Police Operations Battalion (in Portuguese, Batalhão de Operações Policiais Especiais) (BOPE), which is the elite troop of the military police of Rio de Janeiro, Brazil. Its training is similar to COPEs, GOPE, Rangers, SWAT, U.S. Marine Corps, and other special brigades; the main characteristic is to carry out raids in the country's favelas against drug trafficking with a strategy and important and powerful weaponry, acting in high-risk operations, including raids in favela neighborhoods and confrontation situations with drug traffickers, for this reason, the applicants of this course have to pass it for 5 months.

In Ecuador, there are two institutions in charge of ensuring the security of citizens, one

of them is the National Police of Ecuador, the same that has by Constitutional mandate according to Article 158 (Constitution of the Republic of Ecuador, 2008) "(...) the internal protection and maintenance of public order are privative functions of the State and the responsibility of the National Police (...)" (p. 48).

In the same Constitution of the Republic of Ecuador (2008), Art. 163 states " (...) members of the National Police will have training based on human rights, specialized investigation, prevention, control and prevention of crime and use of deterrence and conciliation as alternatives to the use of force".

Establishing in this way, as part of the selection and recruitment process, psychological, knowledge, and physical tests, both in the initial stage of the selection process and during the promotion courses.

In this sense it is essential to establish that physical tests according to (Muñoz Ríos, 2012) are a series of tests, in an objective way make it possible to measure or know the physical condition of a person. Similarly, the author defines Physical Condition as the set of anatomical and physiological qualities that a person has and that enable him/her to a greater or lesser degree for the performance of physical activity and effort.

In Ecuador, the National Police has the Intervention and Rescue Group (GIR), the same that has Policemen trained to fight drug trafficking, and anti-terrorism, are responsible for the rescue of people, deactivation of explosives, hostage rescue, among other activities reason why the author Linares (2015) notes that the "GIR has become the Special Training Center of the entire National Police of Ecuador, for their professionalism and knowledge, has become today in the true Elite Group of the Police" (p.20). In this context, to gain access to this unit, it is required to complete an admission process among which stands out in the first instance the execution of physical tests, passing these tests proceed to the psychological test and subsequent academic and specialized preparation according to the Group that is being applied.

Considering that the Police must have excellent physical preparation, the current approach is the use of functional training

exercises, which according to the author Schiavello (2018), is based on performing exercises that adapt to the natural movement of the human body, working all muscles and joints. This method allows one to carry out, in a normal way, the daily activities, improving performance without high risks of injury, among the main exercises are worked dominantes, dead weight, squats, planks, and loaded, among others.

According to the above, and considering the level of demand that police officers must meet in the performance of their duties, the process to enter these special groups is considered a problem, generating a possibility of improving the process through this research, for which the objective is to determine physical and anthropometric indicators in the first phase of the selection process in the advanced GIR course of the National Police of Ecuador.

## 2. Methods

For the statistical analysis, descriptive-explanatory research of correlational order is established, whose purpose is to generate in a summarized and clear way the use of the data obtained. Likewise, the quantitative type of research will be applied through the collection of information through physical tests, with a population of 40 policemen, the same that after two weeks of the course, established a sample composed of 17 policemen who met the following inclusion criteria:

- ✓ Age group 21 to 30 years old
- ✓ Active police officers
- ✓ Pass the medical tests
- ✓ Enrollment in the advanced GIR course
- ✓ Police officers at the national level

At the beginning of the course, it was determined for this first phase, an application time of eight (8) weeks, during which the first two weeks are considered a biological adaptation since the training takes place in the city of Quito and considering that there are police officers from all over the country, i.e., from the Coast, Highlands, and East, which hinders the normal performance in tests or physical tests due to the issue of altitude.

Among the main tests performed to determine the diagnosis and subsequent physical work are the following.

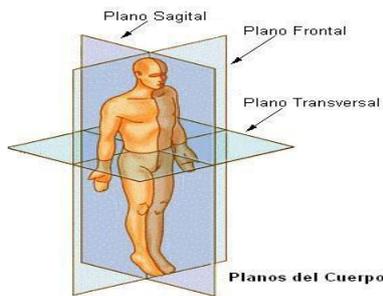
Anthropometric analysis: which the author Lino Humerez (2021) defines as the measurement of variations in the physical

dimensions and composition of the human body at different ages and different degrees of nutrition, that is, the body composition is analyzed, and through the weight, it can be determined what amount corresponds to lean mass, muscle mass, as well as information, can be obtained through the thickness of the skin folds, the closed curved measures that can be

obtained for example from the armed perimeter, among other aspects.

To obtain anthropometric measurements it is essential to know the 3 planes that divide the human body, i.e., the sagittal plane, vertical plane, and horizontal plane as shown in Figure 1.

**Figure 1.** Plans of the human body



**Source:** De Azevedo (2020)

In the sagittal plane it passes through the middle of the body dividing the body into symmetrical halves, as can be seen right and left, while the frontal plane divides the body into two parts ventral or anterior and dorsal or posterior; and finally, the horizontal plane which is transverse to the two previous ones and divides the body into upper and lower.

Among the tools used to take anthropometric measurements, the most used are the anthropometer which has two calipers, and the caliper or caliper which is used to take smaller measurements.

**Squat test:** a squat test is established to measure aerobic-anaerobic endurance, applying the test for sixty (60) seconds, the exercise consists of flexing the knee joint, sending the buttock backward, and simulating the sitting position in the air (Altorendimiento.com, 2019).

**Elbow flexion test:** It is a test that allows measuring the resistance of the upper limbs, which is performed in the prone position or face down, with the feet and hands resting on the floor, the body should be kept straight, without raising the buttocks, and the hands should be placed on the floor at shoulder height (Altorendimiento.com, 2020). The duration of the test is sixty (60) seconds, the highest number of repetitions.

**Balke test:** This test, as in the case of the Cooper test, seeks to determine the level of aerobic capacity of the athlete, i.e., if it is performed

correctly, the maximum effort can be obtained. According to Daza (2018), this test consists of measuring the distance covered in 15 minutes, through a continuous run, during a certain time at the same intensity without rest, reaching an intensity of between 70% to 85% of the Maximum Heart Rate (FCM), without pauses, or stopping, allowing the development of aerobic or anaerobic endurance if a specific intensity is requested (Noobish, 2017). It is usually performed on an athletic track and once the 15-minute results are obtained, either of the two formulas can be applied: 1) the original formula:  $VO_2 = 6.5 + (12.5 \times \text{kilometers traveled})$  that belongs to the physiologist Bruno Balke hence its name in the test; and 2) the formula  $VO_2 = 0.172 \times (\text{distance in meters} / 15 - 133) + 33.3$  proposed by Frank Horwill in 1994.

**Climbing the cape:** is a test that requires agility, strength, and above all coordination, it is performed in the police, in the fire department, and even currently is part of the CrossFit exercises, for this research, it is essential to consider the time in which the police officer takes to climb all of the capes.

**400-meter speed test.** The 400-meter speed test is a long-distance test, which is preferably performed on an athletic track, where the exact distance of 400 meters is established, and the time that the policeman makes during the course until he crosses the finish line is controlled.

**Test of Dominadas:** the pull-ups or push-ups on a fixed bar, works the strength of the shoulders, elbows, wrists, the Core is worked and the muscular work of the upper extremities is fundamental, to evaluate the test, the policeman must perform the greatest number of repetitions of pull-ups without falling or letting go of the bar (Monasterio, 2017).

**Swimming Test:** It is a complete aerobic exercise that works all the muscles. The swimming test consists of performing the freestyle for 200 meters, that is to say, the athlete must perform 4 pools of 50 meters, and the total time taken to reach the total distance is considered. This test is a fundamental part even for the applicants to the Police School, therefore, it is a test that is always considered within the physical tests (Ministerio de Gobierno, 2021b).

The tests were applied in three phases or moments within the planning, 1) the first test was carried out as a diagnosis to know the physical condition in which the policemen are to start the course, that is to say, it is the previous test; 2) the second test was carried out

in the fourth week of work, that is to say, a formative evaluation was carried out, by which the evolution of the physical condition of the policemen participating in the course was analyzed; 3) finally a third and last physical test was developed in which the real physical condition was obtained, after applying the eight (8) weeks of training, based on a structured planning in preparatory, specific, pre-competitive periods, with a functional resistance training, the same that was developed in the facilities of the GIR - Quito, which has all the structural facilities for the total development of the intensive physical preparation of 8 weeks, which will allow once this phase is approved, to continue with the psychological tests and the academic part.

The measurement scales for each test are divided into bad, good and excellent, obtaining the values from the diagnostic test, since they cannot be measured about the times and marks established for athletes, thus considering the minimum and maximum values in each test (Table 1).

**Table 1.** Physical test measurement scale

	<b>Bad</b>	<b>Good</b>	<b>Excellent</b>
Squat	40-48	49-57	58-66
Elbow bends	32-43	44-55	56-67
Hip flexion and extension	24-35	36-47	48-59
Balke test	2.46-2.83	2.84-3.21	3.22-3.59
Climbing the cape	8.15-15.15	16.15-23.15	24.15-31.15
Speed (400mtrs.)	60.85-68.62	69.62-77.39	78.39-86.16
Pull-ups	4-8	9-13	14-18
Swimming (200mtrs.)	262.26-370.26	371.26-479.26	480.26-588.26

**Source:** Own elaboration

Likewise, once the results of the 3 tests are established, it is essential to determine the descriptive statistical values found and the reliability of the tests through the measurement of Cronbach's alpha, this coefficient ranges between 0 and 1, to determine the reliability of the value obtained must be closer to one; to obtain this value the statistical tool Statistical Package for Social Sciences (SPSS) of IBM (2020) was used, which gave a value of Cronbach's alpha of 0.87, which allows us to indicate the reliability of the tests carried out.

### 3. Results

Once the diagnosis of the 40 policemen who entered the course was made, the results showed that among those enrolled in the course, the ages ranged from 21 to 30 years, being the predominant age of 26 years with an (n = 10.25%). In other words, they are at an age at which they can easily execute with ease and experience, both physically and psychologically, all the activities foreseen in the physical preparation planning. Likewise, it was

determined that the most predominant police rank is that of a unit police officer with (n=30; 75%), while second lieutenants are only (n=10, 25%).

To start the diagnosis, the anthropometric test was applied, through which a description of the

body composition of the police officers was generated to assess their nutritional and muscular state, before the execution of physical exercises, as well as the follow-up with an adequate diet to improve their physical appearance at the end of the eight (8) weeks of training.

**Table 2.** General anthropometric data

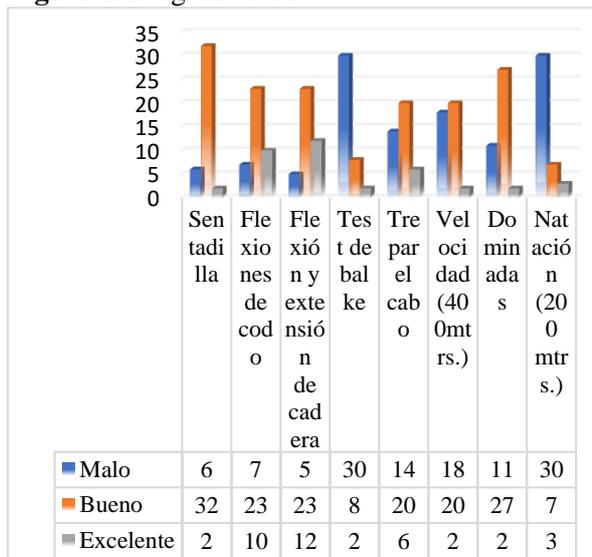
ACTUAL WEIGHT	IDEAL WEIGHT	FAT WEIGHT	MUSCLE WEIGHT	ENDOMORPHIC SM	MESOMORPHIC SM	ECTOMORPHIC SM
63.20	65.375	11.75%	47.27%	2.89	4.36	2.75

Source: Own elaboration

Table 1 shows the real average weight of the total population, which is 74.36 kg. Through the application of formulas and a specific database, it was possible to obtain the measurements shown in the table, the ideal weight is 65.57 kg on average, the fat weight is 14% and the muscle weight is 47%, to finally obtain the Body Mass Index (BMI) which for this research is of mesomorphic tendency, which will facilitate the recovery of the ideal weight in a short time.

In the physical tests, it was possible to determine the real state in which they arrived, as shown in graph 1, there are tests such as swimming, balke test, and speed, that is, in the aerobic tests, where a poor physical condition is presented, however, in the rest of the tests, the results are good, that is, they were above the values established in the measurement scales, thus obtaining as a general result, that the adaptation stage planned for the first two weeks, could be worked normally without physiological or physical inconveniences in the Policemen.

**Figure 1.** Diagnostic test.



Source: Own elaboration

After this diagnosis, a plan of functional exercises was developed, which were applied

for 8 weeks with a progressive intensity; in this process, two more tests were performed, one in

the fourth week and another in the final week, with a sample of 17 policemen, which projected the following data.

**Table 3.** Comparative table of physical tests

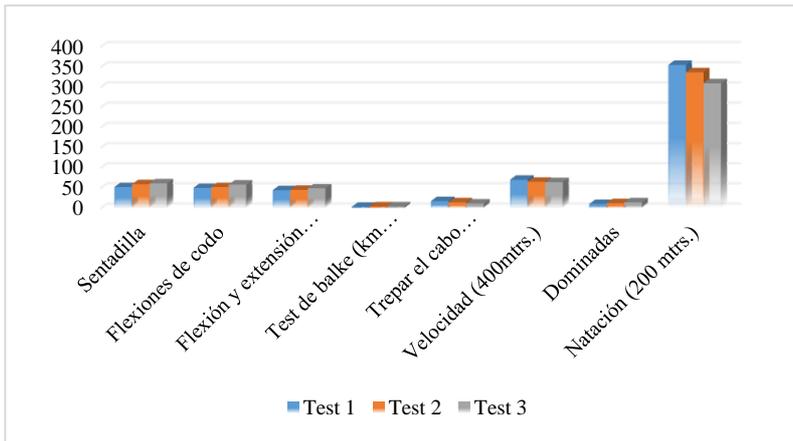
TESTS	Test 1	%	Test 2	%	Test 3	%	TOTAL
<b>Squat</b>	52	30	59	34	61	35	172
<b>Elbow bends</b>	50	31	52	33	58	36	160
<b>Hip flexion and extension</b>	44	32	45	33	49	36	138
<b>Balke test (km run)</b>	3	27	4	36	4	36	11
<b>Cape climb (seconds)</b>	17	40	14	33	11	26	42
<b>Speed (400mtrs.)</b>	70	35	65	33	64	32	199
<b>Pull-ups</b>	10	28	12	33	14	39	36
<b>Swimming (200 mtrs.)</b>	354.58	35	336.34	34	309.04	31	999.96

**Source:** Own elaboration

For the comparison of the tests, the sample of the 17 policemen is applied as shown in Table 3, in which there is significant progress in each test; such as the squat in average in the first test 52 repetitions were performed; in the second test 59 repetitions were performed and finally in the last test in 61 squats were performed; regarding the elbow flexion test the variation was from 50 to 52 and finally 58 repetitions. In the hip flexion and extension test, the progress has been 44 repetitions in the first instance, 45 in the second test and for the last test 49 repetitions were performed on average; in the balke test, on the other hand, the continuous run of 15 minutes was developed in 3 kilometers, in the second test they ran an average of 4 kilometers and in the third test they also ran an average of 4 kilometers; in the test of climbing to the end in the first test was 17 seconds, while in the second test was 14 seconds and improving even more in the third test, performing it on average in 11 seconds; in the speed test of 400 meters, which indicates the

value in numbers, which when divided for the minutes (18400) which is the number of minutes in a day, is obtained on average five minutes and thirty seconds (05: 30), in the second speed test 65 represents five minutes with six seconds (05:06) and in the third test, 64 represents five minutes with one second (05: 01), it can be observed the improvement in the decrease of time in each test; in the pull-ups the first test has on average 10 repetitions, in the second test 12 repetitions and for the third test it goes up to 14 repetitions; in the 200 meters swimming test, as in speed, there is a number that is transformed to time in seconds (1440) and it is obtained in the first test 355 equals five minutes fifty-four seconds (05: 54), while for the second test 336 is equivalent to five minutes thirty-six seconds (05:36) and finally in the third test 309 represents five minutes nine seconds (05:09), which allows observing a clear improvement in the reduction of time in the 200 meters.

**Figure 2.** Comparative graph of physical tests



Source: Own elaboration.

As explained in Table 3 and Figure 2, there were improvements in the times and repetitions performed in each test, therefore, it is essential to understand that this was obtained through the rigorous application of functional exercise planning, which after a process of 8 weeks has been successful.

Finally, it is important to know what was the percentage of increase or improvement between the first test and the last one, determined by each test carried out.

Table 4. Percentage increase from test 1 to test 3

PRUEBAS	Test 1	Test 3	% de Variación
Squat	52	61	17%
Elbow bends	50	58	16%
Hip flexion and extension	44	49	11%
Balke test (km run)	3	4	33%
Cape climb (seconds)	17	11	-35%
Speed (400mtrs.)	70	64	-9%
Pull-ups	10	14	40%
Swimming (200 mtrs.)	354.58	309.04	-13%

Source: Own elaboration.

Among all the tests performed, the one with the best performance was the pull-ups, which increased by 40% in the 8 weeks of hard work, likewise, as shown in Table 4, the climbing test is at (-35%), which is, it improved by lowering the times from 17 seconds to 11 seconds.

For the comparison of tests, the Friedman test was used, which allows the comparison of more than 3 measurements to determine that the difference is statistically significant, therefore,

a null hypothesis (Ho) that indicates that the tests do not have differences or improvements during the 8 weeks of training, with a level of significance established for a  $p < 0.05$ , which determines a significance close to zero, thus proving that there is an improvement between each test, that is to say, that as the tests were taken, the conditions improved and performed better times and a greater number of repetitions, therefore the null hypothesis is rejected, as can be seen in Table 5.

Table 5. Friedman test

Tests	Average Range		
	Test 1	Test 2	Test 3
Squat	15.15	18	18.26
Elbow bends	13.94	15.56	17.21
Hip flexion and extension	12.47	12.65	14.15
Balke test (km run)	1.12	2.41	2.47

<b>Cape climb (seconds)</b>	8.47	6.82	5.38
<b>Speed (400mtrs.)</b>	21.24	20.35	19.03
<b>Pull-ups</b>	5.09	5.91	7.5
<b>Swimming (200 Mtrs.)</b>	24.53	24.47	23

**Source:** Own elaboration.

**Table 6.** Test statistics.

Test statistics <sup>a</sup>	
N	17
Chi-square	389.706
df	24
Asymptotic sig.	.000

a. Friedman test

**Source:** Own Authorship.

As shown in Tables 5 and 6, the Friedman test shows the average range of improvement between each test, observing in the test statistics the significance value of  $p=0.00$ , the null hypothesis is rejected as it is less than  $p<0.05$ , as explained above.

#### 4. Discussion

The purpose of this research was to determine physical and anthropometric indicators in the first phase of the selection process in the advanced GIR course of the National Police. According to the aforementioned objective, it was possible to apply anthropometric tests and physical indicators through a battery of tests that are necessary to determine the physical condition of the police officers.

Martínez Sanz & Urdanpilleta Otegui, (2012) point out that anthropometric tests measure weight, height, skinfolds, diameters, lengths, and perimeters for the estimation of body composition (BC) through a protocol of action as well as the application of various equations for estimating the BC, similarly in the tests performed in this study, these types of variables were thoroughly analyzed to determine body composition; it was determined that the type of body composition that prevails is mesomorphic, which at the beginning had a high fat composition, but at the end of the 8 weeks, improvements in body composition were observed, this although in the daily work performed by the person of the national police, is physical and administrative, in addition to considering the year of a pandemic in which they became more sedentary.

The study conducted by the Diaz Cevallos et al. (2021) in their anthropometric comparison between police officers from Quito and Guayaquil, determined that in both cases, the police officers obtained very good results, that being personnel trained for special missions, the groups present considerable muscular strength with an average of  $46.83 \pm 2.39\%$  in muscle mass and  $14.88 \pm 2.44$  in fat mass, the average weight of  $75.72 \pm 6.95$  Kg and age of  $35.10 \pm 6.51$  years, on the contrary, in our study, there is the average age of 24 years and an average weight of 63.20 Kg.

The physical results present a revealing improvement between the two main tests, the initial or diagnostic test and the final test, considering that the average age of the study is 24 years, the results considered through the battery of tests are: squats with a final average of 61, elbow flexions with an average of 58 repetitions, hip flexion and extension 49, balke test of 4 km, speed of 400 meters an average of (05: 01 minutes), climbing at the end has an average of 11 seconds, and in the pull-ups test an average of 14 repetitions was obtained, and swimming an average of (05:09 minutes), which counteracts with the results achieved in similar tests performed by (Hernández Murúa et al. , 2017) in which they did a study with 206 policemen divided into group of officers and cadets with the lowest values in VO<sub>2</sub>max, abdominal strength and elbow flexor-extensor

strength, as well as the physical capacity of speed and the ability to change direction is not affected by age, considering that the average age was 31 years old.

Finally, the structured planning of the functional exercises applied in the 8 weeks of the first part of the GIR course, are exercises focused on improving physical condition, as mentioned by the author Marca, (2015), in the national police there are different levels of physical condition, so there are people who are more sedentary by the administrative work practice in which they perform, so it is

## 5. Conclusions

The implementation of a specific work plan with functional exercises focused on physical improvement, applied for 8 weeks, has generated an optimal result, through which the police members of the course were able to complete this stage without problems or injuries and with visible results for those who have been two years of pandemic without activity.

The theoretical background analyzed during this research, showed that the bibliography consulted about physical and anthropometric tests at the national level are relevant studies and of great contribution to the development of this research, carried out for the benefit of the National Police of Ecuador and its GIR course.

This implementation of physical tests and specific functional exercises must be carried out continuously, improving and changing the

important to differentiate a physical activity program in which the individual adapts more easily.

However, the work performed by many national police officers requires an excellent physical condition that is not only anchored to the approval of a special course, as determined by the (Ministry of Government, 2021a) the good physical condition of a police officer is the fundamental letter for his work to generate the best results, for this reason, the National Police performs physical tests to personnel in all provinces on an annual basis.

focus of the exercises in each course that is carried out either for the Intervention and Rescue Group (GIR) or for the Special Operations Group (GOE) at the national level.

Structuring correctly the order of the tests for the correct development of the GIR course, due to the importance it has in the preparation of the Police, it is fundamental to start with the medical part and then psychological to continue with the physical aspect and later the academic.

The application of this stage of the GIR course did not generate expenses or investments for the Institution, by using the infrastructure of the National Police located in Quito, where there are all the comforts for the realization of the work or physical pieces of training, as well as for the lodging since it is a course for Policemen at National Level.

## 6. References

1. Altorendimiento.com; (2019). PRUEBA DE CUCLILLAS ( SENTADILLAS ). Altorendimiento.Com. tomado de <http://altorendimiento.com/prueba-de-cuclillas-sentadillas/>
2. Altorendimiento.com. (2020). Prueba de flexiones. Altorendimiento.Com. tomado de <https://altorendimiento.com/prueba-de-flexiones/>
3. Carabineros. (2021). Departamento de Operaciones Especiales-GOPE Chile. [www.Carabineros.Cl](http://www.Carabineros.Cl). [chile-carabineros.blogspot.com/2012/07/departamento-de-operaciones-policiales.html](http://chile-carabineros.blogspot.com/2012/07/departamento-de-operaciones-policiales.html)
4. Constitución de la Republica del Ecuador. (2008). Constitución de la República del Ecuador 2008. Incluye Reformas, 1–136. [https://www.oas.org/juridico/pdfs/mesicic\\_4\\_ecu\\_const.pdf](https://www.oas.org/juridico/pdfs/mesicic_4_ecu_const.pdf)
5. Cruz Beltrán, A. (2010). Valoración del Proceso de incorporación de la Policía Nacional desde la perspectiva de los aspirantes y los incorporados en el periodo 2009-2010 [Universidad de San Buenaventura]. In Universidad de San Buenaventura. [http://bibliotecadigital.usbcali.edu.co/bitstream/10819/300/1/Valoracion\\_Proceso\\_Incorporacion\\_Cruz\\_2010.pdf](http://bibliotecadigital.usbcali.edu.co/bitstream/10819/300/1/Valoracion_Proceso_Incorporacion_Cruz_2010.pdf)
6. Daza, C. (2018). Cómo medir el VO2max: el test de Balke o 'de los 15 minutos'. [www.Carreraspopulares.Com](http://www.Carreraspopulares.Com). <https://www.carreraspopulares.com/noticia/como-medir-el-vo2max-el-test-de-balke-o-de-los-15-minutos>
7. De Azevedo Guaura, R. (2020). Planos y ejes

- del cuerpo humano. Liferder, 1–8. <https://www.liferder.com/planos-anatomicos-ejes/>
8. Diaz Cevallos, A., Linares, I., Molina, J., Guevara, V., & Romero, M. (2021). Análisis comparativo de la Composición Corporal antropométrica del personal policial de Quito y Guayaquil 2021. *Revista Conectividad*, 2(1), 1–7. <https://revista.ister.edu.ec/ojs/index.php/ISTER/article/view/14/23>
  9. Hernández Murúa, J. A., Quiñonez Reyna, J., & Martínez Barreda, J. L. (2017). Composición Corporal y Aptitud Física en Oficiales de Policías y Cadetes. *Revista Mexicana de Investigación En Cultura Física y Deporte*, 8(9), 72–84. <https://ened.conade.gob.mx/Documentos/REVISTA ENED/Revista10/articulo5.pdf>
  - 10 IBM. (2020). Software IBM SPSS. <https://www.ibm.com/es-es/analytics/spss-statistics-software>
- Linares Ramírez, J. I. (2015). Proyecto de investigación de una intervención en un operativo de alto riesgo en el grupo de intervención y rescate de la Policía Nacional del Ecuador. [Universidad San Francisco de Quito]. <https://repositorio.usfq.edu.ec/bitstream/23000/4673/1/113855.pdf>
11. Lino Humerez, P. M. (2021). Valoración Continua por Hábitos de Alimentación en la Población Boliviana: Estudio Antropométrico. <https://iifi.umsa.bo>, 1–9.
  12. Marca Marca, M. R. (2015). Manual de Actividad Física para La Policía Nacional [Universidad Politécnica Salesiana]. In Universidad Politécnica Salesiana Sede Cuenca. <https://dspace.ups.edu.ec/bitstream/123456789/7949/1/UPS-CT004807.pdf>
  13. Martín Sanjuan, L. (2021). Así son las pruebas físicas para entrar a la Policía Nacional, Guardia Civil, GEO, Policía Municipal. [https://as.com/diarioas/2021/10/30/actualidad/1635588466\\_807782.html](https://as.com/diarioas/2021/10/30/actualidad/1635588466_807782.html)
  14. Martínez Sanz, J., & Urdanpilleta Otegui, A. (2012). Protocolo de medición antropométrica en el deportista y ecuaciones de estimaciones de la masa corporal. *EFDeportes.Com*, 1, 4. <https://www.efdeportes.com/efd174/protocolo-de-medicion-antropometrica-en-el-deportista.htm>
  15. MINDEFENSA. (2021). Perfil de los Comandos en Operaciones Especiales y Antiterrorismo COPEs de la Policía Nacional-Colombia. [Www.Policia.Gov.Co. https://www.policia.gov.co/especializados/copes/perfil](https://www.policia.gov.co/especializados/copes/perfil)
  16. Ministerio de Gobierno. (2021a). El buen estado físico es prioridad entre los policías. [Www.Ministeriodegobierno.Gob.Ec. https://www.ministeriodegobierno.gob.ec/el-buen-estado-fisico-es-prioridad-entre-los-policias/](https://www.ministeriodegobierno.gob.ec/el-buen-estado-fisico-es-prioridad-entre-los-policias/)
  17. Ministerio de Gobierno. (2021b). Instructivo para la ejecución de evaluaciones físicas a los señores postulantes bachilleres. <https://informacionecuador.com/pruebas-fisicas-policia-nacional-hombres-mujeres/>
  18. Monasterio, A. (2017). Prueba de dominadas. *El Blog de Fisioterapia.Com*. <https://www.blogdefisioterapia.com/prueba-de-dominadas/>
  19. Muñoz Ríos, G. (2012). Pruebas Físicas. [Www.Uaeh.Edu.Mx, 1–9. https://www.uaeh.edu.mx/docencia/P\\_Presentaciones/prepa3/pruebas\\_fisicas.pdf](https://www.uaeh.edu.mx/docencia/P_Presentaciones/prepa3/pruebas_fisicas.pdf)
  20. Noobish, P. (2017). Sistema Entrenamiento Continuo. [Www.Tafadycursos.Com. https://www.tafadycursos.com/load/fundamentos\\_biologicos/entrenamiento\\_deportivo/sistemas\\_entrenamiento/84-1-0-945](https://www.tafadycursos.com/load/fundamentos_biologicos/entrenamiento_deportivo/sistemas_entrenamiento/84-1-0-945)
  21. Policía Militar de Paraná. (2021). Batallón de Operaciones Especiales de Policía - BOPE. Batallón de Operaciones Especiales. <https://www.pmpr.pr.gov.br/BOPE>
  22. RPP Noticias. (2016). 17 Agentes SUAT se gradúan tras culminar con éxito tercer curso de técnicas de combate (pp. 1–7). *RPP Noticias*. <https://rpp.pe/peru/lambayeque/17-agentes-suata-se-graduan-tras-culminar-con-exito-tercer-curso-de-tacticas-especiales-noticia-984301?ref=rpp>
  23. Sampablo, J. (2018). Pruebas físicas ascenso policial. <https://es.slideshare.net/Peablo/pruebas-fisicas-ascenso-policial>
  24. Schiavello, A. (2018). ¿Qué es el entrenamiento funcional? Instituto ISAF. <https://blog.institutoisaf.es/que-es-entrenamiento-funcional>