

Impact Of Six-Week Training Program On Physical Fitness And Performance For Students Of The Iraqi Police Academic

Nabil Mutlaq Nasser, Fairouz Azaiez

*Higher Institute Of Sport And Physical Education Of Sfax, University Of Sfax, Tunisia.
Research Laboratory Education, Motricité, Sport Et Santé, LR19JS01, High Institute Of Sport And Physical
Education Of Sfax, University Of Sfax, Tunisia.
Higher Institute Of Sport, And Physical Education Of Gafsa, University Of Gafsa, Tunisia.*

Abstract

The research problem, through the researcher's experience as one of those concerned with the affairs of the Iraqi Police College and one of its members, and through a general view of the physical exercises used in the Iraqi Police College, are good programs, but they do not achieve the necessary physical fitness. There is no harm in searching for modernity and development in preparing exercises that achieve high physical fitness. From here, the research began to prepare special physical exercises that achieve the level of physical fitness required to be possessed by students of the Iraqi Police College. The researcher used the experimental method with two experimental and control groups. The research community was students of the Iraqi Police College for the academic year 2023-2024, the experimental research sample consisted of (10) students and the control group consisted of (10) students who were selected intentionally, while the exploratory sample numbered (5) students. The researcher used devices, tools and means of collecting information that are consistent with the research process. The effect of using special physical exercises and their effectiveness in raising some elements of physical fitness for students of the Iraqi Police College. The researcher recommends: Adopting the physical exercises prepared by the researcher by the physical fitness trainers at the Iraqi Police College, which have proven effective in developing their physical abilities.

Keywords: Training program, Physical fitness, Performance, Iraqi police.

Date of Submission: 13-10-2025

Date of Acceptance: 23-10-2025

I. Introduction

The implementation mechanism for a proposed physical program to improve the physical fitness of police academy students is a systematic process based on assessing student needs, designing varied training exercises, and implementing progressive training programs focused on improving strength, endurance, flexibility, and speed (Smith & Johnson, 2021; Billat, 2020; Alexandris & al., 2013; Tsao, Liu & Chang, 2022). The mechanism begins with assessing students' current physical levels through standardized tests, followed by designing a customized training plan that includes resistance training, cardiovascular exercises, and flexibility exercises, with a specific schedule to ensure continuous progress. The implementation takes into account the repetition of exercises, the diversification of training methods, and ensuring adequate rest periods to achieve the desired physical adaptation (Poignard & al., 2020; Mc Kay & al., 2022; Cronin & al., 2005). In addition, continuous assessment and periodic follow-up are encouraged to ensure that the specified goals are achieved and the program is adjusted as needed. This mechanism is based on the principles of modern training science (Schneider & al., 2023; Nimphius & al., 2018; Rahimi & al., 2005; Mateus, Esteves & al., 2020). Research in the field of physical training generally presents scientific facts with a view to achieving the best results and accomplishments in order to reach goals, particularly in the field of physical training for police officers (Annino, Romagnoli & al., 2021; Tortella, Quinto & al., 2023; Curbach & Loss, 2020; Fennell, Peroutky & Glickman, 2016; Klepin, Wing, Higgins & al., 2019). General physical fitness is the process of developing and improving all elements of physical fitness. It is considered the foundation upon which specific physical fitness is built. It is also an individual's ability to possess physical and motor skills in a general and integrated manner to meet the demands of daily life, and it is the basis of specific physical fitness (Bannell, France-Ratcliffe & al., 2023; Carrier, Creer, Williams & al., 2020;). The measure of advanced police culture has been linked to the concept of the efficiency of internal security forces, which means the extent to which they enjoy a high level of physical and motor skills, functional and psychological efficiency to advance and improve the level of maintaining order in terms of security and safety through high activity and vitality. In everyday language, the term "training" is used

in various fields and generally refers to a process that, through physical exercise, seeks to achieve a level that varies according to the objectives set (Weineck, 1983; Grün, 2011). Physical training could be defined more precisely as “the planning and organization of a transformation process aimed at moving the practitioner, whether an athlete or not, from an initial observed state to a desired final state” (Roger, 2003, p. 6). The ability to engage in physical activities is known as physical fitness (PF), and it is mostly determined by hereditary and training factors [Ortega, Ruiz & al., 2008; Ortega, Leskošek & al., 2023; Casazza & al., 2009]. Musculoskeletal fitness (MSF), cardiorespiratory fitness (CRF), body composition, and flexibility are examples of quantifiable factors that are closely associated with health and are included in physical fitness [Caspersen, Powell & al., 1985; Santana, Azevedo & al., 2017; Sgro., Quinto & al., 2024]. In order for athletes to have strong muscles and efficient, excellent cardiorespiratory function—two crucial components for both sports performance and long-term health—they must maintain a high level of physical fitness (Stodden, Langendorfer & al., 2009, García-Hermoso & al., 2020). The Physical preparation is considered an integrated set of scientifically and educationally studied sports exercises, and aims to raise the body's motor and physiological efficiency, and is usually supervised by a specialized physical preparation trainer, especially if the person has physical specifications that qualify him to succeed in applying the components of any physical program, to increase his skill in it and the body's efficiency and ability to control its movement and fitness (Annino, Romagnoli & al., 2021; Tortella, Quinto & al., 2023). Physical exercises are generally considered a constructive period for preparing and coordinating all muscles, and good preparation through physical and motor exercises that are prepared according to a scientific method leads to positive physiological changes to improve the level of physical performance (Lupton-Smith, Fourie & al., 2022; Saugy, Drouet & al., 2020; Sponselee, Kroeze & al., 2021). Though studies have produced conflicting findings on motivation, systematic reviews have demonstrated that school-based PA treatments can improve students' knowledge and physical health (Haible, Volk & cal., 2019; Demetriou & Höner, 2012; Tortella, Quinto & al., 2023; Smith, Eather & al., 2014). Closer inspection reveals particular difficulties and research gaps in intervention studies on health promotion in PE that incorporate both theoretical and practical elements (Demetriou & al., 2015; Demetriou & Höner, 2012; Loss, Brew-Sam & al., 2020; Strobl, 2019; Curbach & Loss, 2020). The problem of the research lies in preparing special physical exercises prepared by the researcher in a modern scientific way to identify their effect on some elements of physical fitness and develop them to reach conclusions through which the researcher can make appropriate recommendations to increase the morale of first-stage students to give their best during the championship and thus bring them to the best levels. Accordingly, athletes place a high value on physical health since it reflects their best potential when competing (Rainer, 2004). In conclusion, the runners must possess strength, flexibility, anaerobic system, speed, and power. There are a number of training methods, including SAQ training, marathon training, repetition training, and fartlek training (Darren & al., 2000; Botonis, Toubekis & al., 2018). Sports like volleyball and water polo, which call for a variety of skills and a high level of endurance, have demonstrated particular performance gains with increases in PF levels (Sgro., Barca & al., 2024; Tammelin, Nayha & al. 2003; Botonis, Toubekis & al., 2018). Numerous elements, such as technical and tactical elements, energy metabolism, distinct muscle activations, training volume, intensity, and the biomechanical demands of the sport, define the distinctiveness of each sport. The aforementioned elements are significant because they may have varying effects on performance depending on the sport's various and particular environmental conditions (e.g., water versus land). The distinct physical and physiological characteristics seen in athletes from various sports may therefore be influenced by the particular training and performance settings (McGinnis, 2013; Kenney, Wilmore, Costill, 2021; Marwat & al., 2021). When incorporated into an organized exercise program, specific physical activities can significantly improve various aspects of physical fitness, such as strength, endurance, power, and flexibility. These activities focus on specific muscles and physical abilities, thereby contributing to overall improvement in athletic performance and health. The research aims to identify the effect of special physical exercises to develop some elements of physical fitness (transitional speed, speed-specific strength, agility). He believes that physical fitness plays a major role in developing personal and volitional traits such as self-confidence, perseverance, courage, risk-taking without recklessness, and caution without hesitation (Rein, Button & al., 2010; Blazeovich & al., 2002; Sampaio & al., 2023). The acquisition of positive attitudes and values that contribute to a sense of satisfaction, effective participation in daily activities, and increased productivity for the individual and, consequently, for society, by increasing the ability to perform daily and professional tasks, the ability to cope with stress, adapt to the various circumstances that individuals face in daily life, and maintain physical fitness, especially when individuals are unable to train due to weather conditions or injury, as it is one of the most important means used during active rest periods, especially physical condition, when the individual is unable to train due to weather conditions or injury, as it is one of the most important means used during active rest periods (Morais, Kilit & al., 2024; Morais, Barbosa & al., 2022; Morais, Forte & al., 2021; Sampaio & al., 2023; Rein, Button & al., 2010). The significance of this research allows coaches to focus their attention on the importance of physical fitness as a component of athletic performance for the Iraqi police force and to determine the specific requirements for each event.

II. Materials And Methods

1. Research objective

To verify the impact of the training program on certain physical qualities of students belonging to the police academy.

To what extent can a 6-semester training program improve the velocity, agility, flexibility and lower leg strength of police students ?

2. Study population

The study was conducted at the Iraqi Police Academy, on the academy grounds. Each participant agreed to participate in the project voluntarily. The inclusion criteria were to select male participants who were part of the academy's police group. In order to limit variability in measurements, we chose students who were physically fit to participate in the study. They were therefore free of injury at the start of the study. The research community was represented by students at the Iraqi Police Academy for the 2023-2024 academic year. The experimental sample was selected randomly (by drawing lots) and includes 25 students. The control group was selected in the same way and includes 25 students. The exploratory sample includes 10 students. Thus, our study population consists of 50 police students belonging to the Police Academy in Baghdad. Their ages range from 18 to 22 (mean = 19.60 ± 1.228) With a normal body mass index (22.52). The normality index (the data are distributed according to the normal distribution, Skewness (Age = 0.412; Height = -0.343; Weight = 0.508 and BMI = 0.043) and Kurtosis (Age = -0.813; Height = -0.343; Weight = -0.250 and BMI = -0.266) tend towards "zero") shows that the population follows a normal distribution. Considering that the ratio between these values and their standard error are all less than 2, we can consider that the age distribution of the study population follows a normal distribution.

3. Field research procedures

The researcher sought to design a physical program containing varied and comprehensive exercises for all variables of the study, which would improve the physical fitness of first-year students at the Iraqi Police College. These variables were: general coordination, performance endurance, abdominal muscle strength endurance, arm strength endurance, speed strength for performance, coordination (eye and leg), transitional speed, speed strength for the arms, speed strength for the legs, agility, and speed endurance). All players were placed in a six-week training program on the field, consisting of six sessions per week, which were conducted on an outdoor field belonging to the Police Academy in Baghdad (Tab.1). Each session followed a standardized structure: A 10-minute warm-up (such as light running, dynamic and passive stretching exercises) and 20 to 40 minutes of physical exercises on the field aimed at improving acceleration, explosive strength (Hammani & al., 2019; Loturco & al., 2021; Mc Bride & al., 1999), flexibility (Nuzzao, 2020; Warneke & al., 2022; Bouguezzi, Sammoud & al., 2023), agility (Barrow zigzag running test 3×4.5 m) (Beato & al., 2018; Davies & al., 2015; Ebben & al., 2010), flexibility (Alter & al., 2004; Dantar & al., 2011), coordination (Allen & Casey, 2017; Rasmussen & Gillberg, 2000) and transition speed (Enemy test (30m) from a moving start) (Asian-Clemente & al., 2022; Haugen & al., 2019). Physical fitness programs in academic policy target a wide range of physical qualities: In the area of physical fitness, training focuses on basic physical abilities, namely endurance, strength, and flexibility.

Table 1. Experimental protocol of the study.

Experimental Group	Pre-test week	-06 Week training program on physical fitness -06 Seances per week	Pre-test week
Control Group	Pre-test week	-06 Weeks of regular training. -06 Seances per week	Pre-test week

4. Statistical analysis

All statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS Version 26, IBM Corporation ; Armonk, NY, USA). The descriptive statistics were calculated for each item of previously supplied data. The data was analyzed using the paired sample T-test and analysis of covariance. Once it was determined that there were no differences in the initial measurement between the groups and that there was no regression homogeneity, the final value was used as the dependent variable, the group variable was a fixed factor, and the Analysis of Covariance (ANCOVA) initial evaluation was taken as a covariate. The threshold for statistical significance was set at $p < 0.05$.

III. Results

1.Characteristics of study sample

Table 2. Descriptive and analytical statistics for characteristics of the two study samples (Age, Height, Weight and Body Mass Index).

	Groups	N	$\bar{x}$	σ	t-value	P	S
AGE	E.Gr	25	19,68	1,215	0,558	0,582	NS
	C.Gr	25	19,52	1,262			
HEIGHT	E.Gr	25	176,44	7,257	60,976	0,339	NS
	C.Gr	25	177,88	6,616			
WEIGHT	E.Gr	25	70,08	3,475	61,499	0,147	NS
	C.Gr	25	70,60	4,453			
BMI	E.Gr	25	22,26	2,205	61,517	0,142	NS
	C.Gr	25	22,42	2,411			
$\bar{x}$: mean; σ : Standard deviation, S : Significance							
E.Gr :Experimental Group; C.Gr : Control Group							
NS : Non-Significant; BMI : Body Mass Index							

Statistical analysis carried out between the experimental and control groups during the pre-tests (before the start of the physical training program for each study group) revealed no significant disparities in terms of age, height, weight and body mass index, indicating a marked similarity between these two groups at the start of the research (Tab.2).

2.Comparison of physical performance in the Control group.

The four tests used in the pre-tests (before the training program for each study group began) showed no statistically significant differences between the experimental group and the control group, suggesting that the two groups were at a similar level at the beginning of the study. This is a significant methodological advantage for the remainder of the investigation (Tab.3).

Table 3: Analytical and descriptive data of the experimental and control groups' post-test physical performance.

	Groups	N	$\bar{x}$	σ	t-value	P	S		Groups	N	$\bar{x}$	σ	t-value	P	S
Explosive Arms	E.Gr	25	7,65	0,638	0,948	0,353	NS	Velocity	E.Gr	25	4,87	0,352	0,453	0,655	NS
	C.Gr	25	7,49	0,703					C.Gr	25	4,83	0,411			
Explosive Legs	E.Gr	25	1,78	0,169	0,158	0,875	NS	Flexibility	E.Gr	25	10,36	1,578	1,365	0,185	NS
	C.Gr	25	1,77	0,195					C.Gr	25	9,76	1,393			
Speed Legs	E.Gr	25	6,24	1,012	1,063	0,298	NS	Agility	E.Gr	25	34,19	0,952	-0,114	0,91	NS
	C.Gr	25	6,00	0,817					C.Gr	25	34,20	0,832			
Speed Arms	E.Gr	25	6,36	0,907	0,499	0,622	NS	Compatibility	E.Gr	25	8,85	1,317	-0,401	0,6902	NS
	C.Gr	25	6,24	0,926					C.Gr	25	8,89	1,451			
Force Arms	E.Gr	25	33,28	5,103	0,53	0,958	NS	$\bar{x}$: mean; σ : Standard deviation, S : Significance							
	C.Gr	25	33,20	4,664				E.Gr :Experimental group; C.Gr : control group							
Force Legs	E.Gr	25	49,80	3,416	0,679	0,503	NS	NS : Non-Significant.							
	C.Gr	25	49,20	3,136											

Table 4 shows pre- and post-intervention comparisons within the experimental group, indicating statistically significant improvements at $p < 0.001$ for all variables measured.

Table 4. Differences between the initial and final measurements of the experimental group

	Experimental group (N=25)			t-value	dl	Sig	Kurtosis	Skewness
	Groups	$\bar{x}$	σ					
Explosive Arms Strength	Before	7,65	0,638	-9,506	24	0,001	-1.1104	-0.01943
	After	10,08	1,288				-0.5136	0.60193
Explosive Legs Strength	Before	1,77	0,195	-7,148	24	0,001	-1.3721	-0.31276
	After	1,86	0,184				-0.6244	0.00401
Flexibility	Before	10,36	1,578	-6,893	24	0,001	-0.7790	-0.09137
	After	13,60	2,872				-0.0694	-0.00126
Speed-specific Legs Strength	Before	6,36	0,907	-19,842	24	0,001	-0.9772	0.26124

	After	9,24	1,012				-1.0605	0.57141
Speed-related Ams Strength	Before	6,24	1,012	-25,545	24	0,001	-0.7823	0.35283
	After	9,16	1,143				-0.8197	-0.02878
Endurance Ams Strength	Before	33,28	5,103	-11,887	24	0,001	-0.6248	-0.09410
	After	44,16	6,122				-0.2384	-0.62504
Endurance Legs Strength	Before	49,80	3,416	-20,905	24	0,001	-0.9508	0.24543
	After	58,48	3,991				7.1400	-2.02747
Velocity	Before	4,87	0,352	8,705	24	0,001	1.2811	0.18534
	After	3,96	0,456				15.0134	-3.20234
Agility	Before	34,01	1,020	8,705	24	0,001	-0.2166	-0.32967
	After	30,49	1,130				0.1795	-0.53506
Compatibility	Before	8,85	1,317	17,225	24	0,001	0.2074	0.77072
	After	6,76	1,165				-0.6820	0.33788

Table 5. Differences between initial and final measurements of the control group

	Control group (N=25)			t-value	dl	Sig	Kurtosis	Skewness
	Groups	$\bar{x}$	σ					
Explosive Arms Strength	Before	7.49	0.703	-6.31	24	0,001	-0.1192	0.902
	After	8.32	0.852				2.9244	0.902
Explosive Legs Strength	Before	1.78	0.169	-7.90	24	0,001	-1.1239	0.902
	After	2.01	0.185				0.8216	0.902
Flexibility	Before	6.24	0.926	-13.61	24	0,001	-0.7840	0.902
	After	7.92	0.812				1.4965	0.902
Speed-specific Legs Strength	Before	6.00	0.816	-15.09	24	0,001	-1.4881	0.902
	After	8.04	0.978				-0.0171	0.902
Speed-related Ams Strength	Before	33.20	4.664	-12.13	24	0,001	-0.4721	0.902
	After	39.12	4.521				-1.0374	0.902
Endurance Ams Strength	Before	49.20	3.136	-9.36	24	0,001	-0.2256	0.902
	After	54.28	3.410				-1.1114	0.902
Endurance Legs Strength	Before	4.83	0.411	-16.65	24	0,001	0.4274	0.902
	After	4.21	0.363				0.6307	0.902
Velocity	Before	9.76	1.393	13.24	24	0,001	-0.2814	0.902
	After	12.08	1.778				-1.3720	0.902
Agility	Before	34.37	0.782	16.91	24	0,001	0.3480	0.902
	After	31.92	0.812				-0.2140	0.902
Compatibility	Before	8.85	1.317	8.93	24	0,001	0.2074	0.902
	After	7.60	1.384				-0.1152	0.902

Final evaluation with verification of the baseline test. Univariate analysis of covariance (ANCOVA) was used to check for variations and assess the impact of the experimental program. Statistically relevant differences were noted on all variables in favor of participants in the test group, with a $p < 0.05$ level of statistical significance. Only the reactive Explosive Legs Strength and Speed-specific Legs Strength showed no statistically significant differences (Tab.6).

Table 6. Significance of differences in variables at the final test with control of the results from the initial test (covariate)

	Experimental group N=25		Control group N=25		ANCOV A	P	η^2	Effect size Cohen (1988)
	$\bar{x}$	σ	$\bar{x}$	σ	F			
Explosive Arms Strength	10.08	1.288	8.32	0.852	70.609	0.001	0.898	Large
Explosive Legs Strength	1.86	0.184	2.01	0.185	0.027	0.876	0.005	Small
Flexibility	9.24	1.012	7.92	0.812	11.128	0.001	0.357	Medium
Speed-specific Legs Strength	9.16	1.143	8.04	0.978	3.454	0.780	0.142	Small
Speed-related Ams Strength	44.16	6.122	39.12	4.521	42.107	0.001	0.778	Large
Endurance Ams Strength	58.48	3.991	54.28	3.410	4.206	0.05	0.244	Small
Endurance Legs Strength	13.60	2.872	4.21	0.363	46.026	0.001	0.719	Large
Velocity	3.96	0.456	12.08	1.778	7.035	0.05	0.638	Large
Agility	30.49	1.130	31.92	0.812	20.118	0.02	0.870	Large
Compatibility	6.76	1.165	7.60	1.384	32.651	0.001	0.731	Large

IV. Discussion

The current study's findings show the benefits of the physical training regimen we suggested, which lasted for six weeks straight and involved one session each day. According to these findings, the control group's

pre-test and post-test differed significantly across all research variables, favoring the post-test (general coordination, performance endurance, abdominal muscle strength endurance, arm strength endurance, speed strength for performance, coordination (eye and leg), transitional speed, speed strength for the arms, speed strength for the legs, agility, and speed endurance). The researcher attributes this development to the control group adopting the program followed by trainers at the Iraqi police academy, which generally adopts exercises that deal primarily with elements of physical fitness, as not all training units for the trainer are devoid of exercises and physics, leading to the appearance of significant differences in favor of the control group in the pre-test and post-test. The hexagonal program significantly affects police academy students' professional performance in addition to their physical fitness. According to several studies (Ahmed & Hassen, 2023; Abdelkader & Kamel, 2020; Billat, 2020; Morais & al., 2024; Keenaviviony & al., 2024; Tortella & al., 2023), athletes who have followed a physical training regimen have excelled at absorbing combat skills, making snap decisions, and handling emergencies. Performance levels in field exercises and practical exams were also improved by activities that emphasized the development of motor and tactical skills. Both prior to and during body mass index training, the experimental group's performance on these tests was noticeably better than that of the control group. These findings are consistent with research by Nikolaidis, Kintziou et al. (2013), Nikolaidis, Ingebrigtsen et al. (2018), and Donnelly, Blair et al. (2009), which notes that physical training does not induce weight loss; rather, it can boost lean mass and lower the percentage of fat. As a result, a physical training regimen can raise energy expenditure over a 24-hour period by increasing muscle mass. It is thought that the exercises created by the researcher as part of the program are what caused the experimental group to show better results for the variables (general coordination, performance endurance, abdominal muscle strength endurance, arm strength endurance, speed strength for performance, coordination (eye and leg), transitional speed, speed strength for the arms, speed strength for the legs, agility, and speed endurance) after six weeks of physical training than the control group, whether before or after training. The daily exercises helped the students' neuromuscular compatibility (speed, strength, agility, velocity, flexibility, compatibility, etc.). This result is consistent with the majority of international studies (Mc Kay et al., 2022; Bannell et al., 2023; Bottonis et al., 2018), which have thoroughly shown that physical training programs enhance physical attributes such as relaxation, sprinting, agility, and change of direction in adult, youth, male, and female athletes. Many studies have shown that a jump-based physical training program improved lower limb muscle explosiveness through vertical jump tests in adult female soccer players, specifically in the area of lower limb muscle relaxation and explosiveness (Ramirez-Campillo & al., 2018; Ramirez-Campillo & al., 2016; Lupton & al., 2022; Hong & al., 2020; Wang & al., 2022). Multiple studies and meta-analyses have also confirmed the positive effects of this kind of training program on soccer vertical jump performance (Ramirez-Campillo & al., 2020; Garcia-Ramos & al., 2017, Pardos-Mainer & al., 2021). Strength training aimed at increasing gestural speed fulfills two fundamental missions, according to the work of Sampaio et al. (2023); Schneider et al. (2023); Hangen (2019); Asian-Clemente et al. (2022): first, it increases the maximal strength (of the muscle groups involved in the movement); second, it develops the capacity to produce high force during rapid movements. According to research by Cometti (2009), Pardos-Mainer et al. (2021), Balshaw et al. (2022), and Sampaio et al. (2023), achieving maximum strength has a favorable impact on other physical attributes (power strength, speed strength). Strength training aimed at increasing gestural speed fulfills two fundamental missions, according to the work of Sampaio et al. (2023); Schneider et al. (2023); Hangen (2019); Asian-Clemente et al. (2022): first, it increases the maximal strength (of the muscle groups involved in the movement); second, it develops the capacity to produce high force during rapid movements. According to research by Cometti (2009), Pardos-Mainer et al. (2021), Balshaw et al. (2022), and Sampaio et al. (2023), achieving maximum strength has a favorable impact on other physical attributes (power strength, speed strength). Speed is a critical performance factor in contemporary training, as noted by Beato (2018) and Asian-Clemente et al. (2022). Because it is always connected to other skills like strength and technique in athletic activities, it is a complicated attribute. It can intervene in a number of ways, including body or segmental displacement speed, chained movement, and single movement (Loturco et al., 2023; Ramirez-Campillo et al., 2016b).

V. Conclusion

This research focused on physical and motor skills and how to work correctly and systematically according to modern scientific principles, far removed from the old-fashioned, time-consuming physical preparation programs. The study question arose from the need to develop more effective training programs based on codified scientific principles, such as high-intensity interval training, neuromuscular stimulation programs and modern recovery methods. Despite the availability of many traditional fitness programs, many are not tailored to individual needs, which can lead to sub-optimal results. Thanks to the experience of the researcher, who is one of the managers of the Iraqi Police Academy, and his general view of the physical preparation programs adopted in the Iraqi Police Academy, this study aimed to prepare a proposal for a highly effective physical program that helps to improve the fitness elements of the students at the Police Academy. Compared with the ordinary training program, the physical training program based on different types of jumps coupled with agility and sprinting

exercises produced significant improvements in the sprinting, relaxation, agility and change of direction qualities of police students at the Police Academy in Iraq (Baghdad). This type of training represents an effective methodical approach to increasing the physical condition of police cadets to achieve optimum competitive fitness in line with the demands of modern policing. Finally, in addition to the physical aspects, future studies need to consider the effects of physical training programs on police performance.

References

- [1] Alexandris, K. (2013). Segmenting Recreational Tennis Players According To Their Involvement Level: A Psychographic Profile Based On Constraints And Motivation. *Manag Leisure*.18(3):179–93.
- [2] Allen, S. & Casey, J. (2017). Developmental Coordination Disorders And Sensory Processing And Integration: Incidence, Associations And Co-Morbidities. *Br. J. Occup. Ther.* 2017, 80, 549–557.
- [3] Alter, M. Alter, M. (2004) *Science Of Flexibility* (3rd Ed.) Human Kinetics, Champaign IL.
- [4] Annino, G.; Romagnoli, C.; Zanela, A.; Melchiorri, G.; Viero, V.; Padua, E.; Bonaiuto, V. (2021). Kinematic Analysis Of Water Polo Player In The Vertical Thrust Performance To Determine The Force-Velocity And Power-Velocity Relationships In Water: A Preliminary Study. *Int. J. Environ. Res. Public Health*, 18, 2587.
- [5] Asian-Clemente, J., Rabano-Munoz, A., Requena, B., & Suarez-Arrones, L. (2022). High-Speed Training In A Specific Context In Soccer: Transition Games. *International Journal Of Sports Medicine*, 43(10), 881–888. <https://doi.org/10.1055/A-1794-9567>.
- [6] Baker, J., Cobley, S., Schorer, J., Wattie, N. (2017). *Routledge Handbook Of Talent Identification And Development In Sport*. Abingdon, Oxfordshire: Routledge.
- [7] Balshaw TG, Massey GJ, Maden-Wilkinson TM, Lanza MB, Folland JP. (2022). Effect Of Long-Term Maximum Strength Training On Explosive Strength, Neural, And Contractile Properties. *Scand J Med Sci Sports*, 32:685– 697.
- [8] Bannell, France-Ratcliffe & Al., (2023). Adherence To Unsupervised Exercise In Sedentary Individuals: A Randomised Feasibility Trial Of Two Mobile Health Interventions, *DIGITAL HEALH*, Volume 9.
- [9] Beato, M., & Al. (2018). Effects Of Plyometric And Directional Training On Speed And Jump Performance In Elite Youth Soccer Players. *Journal Of Strength And Conditioning Research*.
- [10] Billat, V. (2020). Training And Testing Of Military And Police Personnel: A Review. *Journal Of Sports Science & Medicine*, 19(2), 123-135.
- [11] Blazevich, A.J, Jenkins DG. (2002). Effect Of The Movement Speed Of Resistance Training Exercises On Sprint And Strength Performance In Concurrently Training Elite Junior Sprinters. *J Sports Sci*. 2002;20(12):981- 990.
- [12] Botonis, P. & Toubekis, A. (2018). Platanou, T. Evaluation Of Physical Fitness In Water-Polo Players According To Playing Level And Positional Role. *Sports*, 6, 157.
- [13] Bouguezzi, R., Sammoud, S., Markov, A., Negra, Y., Chaabene, H. (2023). Why Flexibility Deserves To Be Further Considered As A Standard Component Of Physical Fitness: A Narrative Review Of Existing Insights From Static Stretching Study Interventions. *Youth*, 3, 146–156
- [14] Carrier B, Creer A, Williams L.R, & Al. (2020). Validation Of Garmin Fenix 3 HR Fitness Tracker Biomechanics And Metabolics (VO2max). *J Measurement Phys Behav*; 3: 331–337.
- [15] Casazza, K.; Gower, B.A.; Willig, A.L.; Hunter, G.R. & Fernández, J.R. (2009). Physical Fitness, Activity, And Insulin Dynamics In Early Pubertal Children. *Pediatr. Exerc. Sci.*, 21, 63.
- [16] Cohen, J. (1988). *Statistical Power Analysis For The Behavioral Sciences* (2nd Ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.
- [17] Conceição F., Fernandes J., Lewis M., González-Badillo J.J., Jimenez-Reyes P. (2016). Movement Velocity As A Measure Of Exercise Intensity In Three Lower Limb Exercises. *J. Sports Sci.*; 34:1099–1106.
- [18] Cronin, J.B., Hansen, K.T. (2005). Strength And Power Predictors Of Sports Speed. *J Strength Cond Res.*;19(2):349-357.
- [19] Dantas, Daoud, Trott, Nodari & Conceição (2011). Flexibility: Components, Proprioceptive Mechanisms And Methods, *Biomedical Human Kinetics*, 3, 39 – 43.
- [20] Darren, S. & Al. (2000). *Protocols For The Physiological Assessment Of High-Performance Runner*, In *Physiological Tests For Elite Athletes*. Champaign: Human Kinetics Publishers.
- [21] Davies, G., Riemann, B.L., Manske, R. (2015). Current Concepts Of Plyometric Exercise. *Int J Sports Phys Ther*;10(6):760-86.
- [22] Demetriou, Y., & Honer, O. (2012). Physical Activity Interventions In The School Setting: A Systematic Review. *Psychology Of Sport And Exercise*, 13, 186-196.
- [23] Donnelly, J.E., Blair, S.B., Jakicic, J.M., Manore, M.M., Rankin, J.W., & Smith, B.K. (2009). Appropriate Physical Activity Intervention Strategies For Weight Loss And Prevention Of Weight Regain For Adults, *Medicine & Science In Sports & Exercise* 41 (2), 459-471,
- [24] Ebben, W.P., Vanderzanden, T., Wurm, B.J., & Petushek, E.J. (2010). Evaluating Plyometric Exercises Using Time To Stabilization. *J Strength Cond Res.*;24(2):300-6.
- [25] Gabbett, T., Georgieff, B., Anderson, S., Cotton, B., Savovic, D. & Nicholson, L. (2006). Changes In Skill And Physical Fitness Following Training In Talent-Identified Volleyball Players. *J. Strength Cond. Res.*, 20, 29–35.
- [26] García-Hermoso, A. (2020). Ramírez-Vélez, R.; García-Alonso, Y.; Alonso-Martínez, A.M.; Izquierdo, M. Association Of Cardiorespiratory Fitness Levels During Youth With Health Risk Later In Life: A Systematic Review And Meta-Analysis. *JAMA Pediatr.* 2020, 174, 952–960.
- [27] García-Ramos A, Haff G, Feriche B, And Jaric S. (2017). Effects Of Different Conditioning Programmes On The Performance Of High-Velocity Soccer-Related Tasks: Systematic Review And Meta-Analysis Of Controlled Trials. *Int J Sports Sci Coach.* 13 (1), 129–151.
- [28] GRÜN, L. (2011). *Entraîneur De Football: Histoire D’une Profession De 1890 À Nos Jours*. Thèse De Doctorat En Sciences Du Sport, Université Lyon 1.
- [29] Hackett, D.A., Davies, T.B., Orr, R., Kuang, K., Halaki, M. (2018). Effect Of Movement Velocity During Resistance Training On Muscle-Specific Hypertrophy: A Systematic Review. *Eur. J. Sport Sci.*; 18:473–482.
- [30] Haible, S., Volk, C., Demetriou, Y., Honer, O., Thiel, A., Trautwein, U., & Al. (2019). Promotion Of Physical Activity-Related Health Competence In Physical Education: Study Protocol For The GEKOS Cluster Randomized Controlled Trial. *BMC Public Health*, 19, Article 396.
- [31] Hammami, M., Gaamouri, N., Shephard, R.J., & Chelly, M.S. (2019). Effects Of Contrast Strength Vs Plyometric Training On Lower-Limb Explosive Performance, Ability To Change Direction And Neuromuscular Adaptation In Soccer Players. *The Journal Of Strength & Conditioning Research*, 33(8),2094-2103.

- [32] Mc Bride, J.M., Triplett-Mcbride, T., Davie, A., & Newton, R.U. (1999). A Comparison Of Strength And Power Characteristics Between Power Lifters, Olympic Lifters And Sprinters. *J. Strength Cond. Res.*, 13(1), 58-66 .
- [33] Haugen, T. (2017). Sprint Conditioning Of Elite Soccer Players: Worth The Effort Or Let's Just Buy Faster Players? *Sport Perform Sci Rep.*; 1:1-2
- [34] Haugen, T., Seiler, S., Sandbakk, & Al. (2019). The Training And Development Of Elite Sprint Performance: An Integration Of Scientific And Best Practice Literature. *Sports Med - Open* 5, 44.
- [35] Hong, X.W., Li, W.B., Li, W.B., Xu, H.Y., Wang, B.L., & Xiao, W. (2020). Experimental Study On Explosion Dispersion Process Of A Multi-Layer Composite Charge Under Different Initiation Modes. *Def. Technol.*, 16, Pp. 883-892
- [36] Kenney, W.L., Wilmore, J. & Costill, D. (2021). *Physiology Of Sport And Exercise*, 7th Ed.; Human Kinetics: Champaign, IL, USA.
- [37] Klepin, K., Wing, D., Higgins, M., & Al. (2019). Validity Of Cardiorespiratory Fitness Measured With Fitbit Compared To VO2max. *Med Sci Sports Exercise*; 51: 2251.
- [38] Loss, J., Brew-Sam, N., Metz, B., Strobl, H., Sauter, A. & Tittlbach, S. (2020). Capacity Building In Community Stakeholder Groups For Increasing Physical Activity: Results Of A Qualitative Study In Two German Communities. *International Journal Of Environmental Research And Public Health*, 17(7), 2306.
- [39] Loturco, I., Fernandes, V., Boulosa, D. A., Siqueira, F., Nakaya, K., Carraco, D., Reis, V. P., Pereira, L. A., & McGuigan, M. R. (2021). Correlations Between Jump Measures And Competitive Performance Remain Stable Over Time In Top-Level Sprinters. *Journal Of Sports Medicine And Physical Fitness*, 61(9), 1202-1207.
- [40] Lupton-Smith, A., Fourie, K., Mazinyo, A., Mokone, M., Nxaba, S. & Morrow, B. (2022). Measurement Of Hand Grip Strength: A Crosssectional/Study Of Two Dynamometry Devices. *S. Afr. J. Physiother*, 78, 1.
- [41] Marwat, N.M., Aslam, H., Hussain, A., Hassan, H., Asghar, E., Zafar, A., & Ullah, H. (2021). Calisthenics Training: Effects On Physical Fitness (Coordination, Flexibility And Endurance) Of Kabaddi Players. *Palarch's Journal Of Archaeology Of Egypt/Egyptology*, 18(1), 5212-5220.
- [42] Mateus, N., Esteves, P., Gonçalves, B., Torres, I., Gomez, M.A., Arede, J., & Al. (2020). Clustering Performance In The European Basketball According To Players' Characteristics And Contextual Variables. *Int J Sports Sci Coach*. 15(3):405-11.
- [43] Mc Ginnis, P.M. (2013). *Biomechanics Of Sport And Exercise*, 3rd Ed.; Human Kinetics: Champaign, IL, USA, 2013.
- [44] Mckay, A., Stellingwerff, T., Smith, E., Martin, D., Mujika, I., Goosey-Tolfrey, V., & Al. (2022). Defining Training And Performance Caliber: A Participant Classification Framework. *Int J Sports Physiol Perform*. 17(2):317-31.
- [45] Morais, J.E., Barbosa, T.M., Neiva, H.P., Marques, M.C., & Marinho, D.A. (2021). Young Swimmers' Classification Based On Performance And Biomechanical Determinants: Determining Similarities Through Cluster Analysis. *Motor Control*. 26(3):396-411.
- [46] Morais, J.E., Forte, P., Silva, A.J., Barbosa, T.M., & Marinho, D.A. (2021). Data Modeling For Interand Intra-Individual Stability Of Young Swimmers' Performance: A Longitudinal Cluster Analysis. *Res Q Exerc Sport*.92(1):21-33
- [47] Morais, J.E., Kilit, B., Arslan, E., Soylu, Y., & Neiva, H.P. (2024). Effects Of A 6-Week On-Court Training Program On The International Tennis Number (ITN) And A Range Of Physical Fitness Characteristics In Young Tennis Players. *Front Sports Act Living*. 6:1304073.
- [48] Nikolaidis, P.T., Kintziou, E., Georgoudis, G., Afonso, J., Vancini, R.L., & Knechtel, B. (2018). The Effect Of Body Mass Index On Acute Cardiometabolic Responses To Graded Exercise Testing In Children: A Narrative Review, *MDPI Sports*, 6, 103.
- [49] Nikolaidis, P.T.; Ingebrigtsen, J. The Relationship Between Body Mass Index And Physical Fitness In Adolescent And Adult Male Team Handball Players. *Indian J. Physiol. Pharmacol.* 2013, 57, 361-371.
- [50] Nimphius, S, Callaghan, S.J., Bezodis, N.E., Lockie, R.G. (2018). Change Of Direction And Agility Tests: Challenging Our Current Measures Of Performance. *Strength Cond J.* 40(1):26.
- [51] Nuzzo, J.L. (2020). The Case For Retiring Flexibility As A Major Component Of Physical Fitness. *Sport. Med.*, 50, 853-870.
- [52] Ortega, F.B., Leskošek, B., Blagus, R., Gil-Cosano, J.J., Maestu, J., Tomkinson, G.R., Ruiz, J.R., Maestu, E., Starc, G. & Milanovic, I., & Al. (2023). European Fitness Landscape For Children And Adolescents: Updated Reference Values, Fitness Maps And Country Rankings Based On Nearly 8 Million Test Results From 34 Countries Gathered By The Fitback Network. *Br. J. Sports Med.*, 57, 299-310.
- [53] Ortega, F.B., Ruiz, J.R., Castillo, M.J. & Sjöström, M. (2008). Physical Fitness In Childhood And Adolescence: A Powerful Marker Of Health. *Int. J. Obes.*, 32, 1-11.
- [54] Pardos-Mainer, E.; Lozano, D.; Torrontegui-Duarte, M.; Cartónlloriente, A.; Roso-Moliner, A. (2021). Effects Of Strength Vs. Plyometric Training Programs On Vertical Jumping, Linear Sprint And Change Of Direction Speed Performance In Female Soccer Players: A Systematic Review And Metaanalysis. *Int. J. Environ. Res. Public Health*, 18, 401.
- [55] Perez-Castilla A, Suzovic D, Domanovic A Et Al. (2021). Validity Of Different Velocity-Based Methods And Repetitions-To-Failure Equations For Predicting The 1 Repetition Maximum During 2 Upper-Body Pulling Exercises. *J Strength Cond Res* 2021; 35: 1800-1808.
- [56] Poignard, M., Guilhem, G., De Laroche Lambert, Q., Montalvan, B., & Bieuzen, F. (2020). The Impact Of Recovery Practices Adopted By Professional Tennis Players On Fatigue Markers According To Training Type Clusters. *Front Sports Act Living*. 2:109.
- [57] Qi, Z., Lin, Y., Liang, W., Liang, M., Chen, R., Zhang, Y. (2024). Explosion Power Evaluation Based On The Energy Absorption Characteristics Of Expansion Tube Structure, *International Journal Of Impact Engineering*, Volume 186, April, P.104886
- [58] Rahimi, R., Behpur, N. (2005). The Effects Of Plyometric, Weight And Plyometric-Weight Training On Anaerobic Power And Muscular Strength. *FU Phys Ed Sport*;3(1):81-91.
- [59] Ramírez-Campillo R, González-Jurado JA, Martínez C, Nakamura FY, Peñailillo L, Meylan C M, Caniuqueo A, Canas-Jamet R, Moran J, Alonso-Martínez AM, And Izquierdo M. (2016a). Effects Of Plyometric Training And Creatine Supplementation On Maximal-Intensity Exercise And Endurance In Female Soccer Players. *J Sci Med Sport*. 19 (8), 682-687
- [60] Ramírez-Campillo R, Vergara-Pederos M, Henríquez-Olguín C, Martínez- Salazar C, Alvarez C, Nakamura FY, De La Fuente CI, Caniuqueo A, Alonso-Martínez AM, And Izquierdo M. (2016b). Effects Of Plyometric Training On Maximal-Intensity Exercise And Endurance In Male And Female Soccer Players. *J Sports Sci*. 34 (8), 687-693.
- [61] Ramirez-Campillo, R.; Sanchez-Sanchez, J.; Romero-Moraleda, B.; Yanci, J.; Garcia-Hermoso, A.; Manuel Clemente, F. (2020). Effects Of Plyometric Jump Training In Female Soccer Player's Vertical Jump Height: A Systematic Review With Meta-Analysis. *J. Sports Sci*.
- [62] Rasmussen, P. & Gillberg, C. (2000). Natural Outcome Of ADHD With Developmental Coordination Disorder At Age 22 Years: A Controlled, Longitudinal, Community-Based Study. *J. Am. Acad. Child Adolesc. Psychiatry*, 39, 1424-1431.
- [63] Reenavivony, Tony, F., Nukman Harith Rosly, M., Mustaza, N., Haikal Shukry, M., Jaequelyne Zefanya, J., Baki, M. H., Mohd Sani, M. H. & Waqqash Mohamad Chan, E. (2024). Effect Of 6-Weeks Calisthenic Training On Physical Fitness: A Case Study Report. *Fitness, Performance And Health Journal*,3(1), 6-13.

- [64] Rein, R., Button, C., Davids, K., & Summer, J. (2010). Cluster Analysis Of Movement Patterns In Multiarticular Actions: A Tutorial. *Motor Control*, 14(2):211–39.
- [65] ROGER, A. (2004), *Entraînement Et Idéologie. Le Cas De L'athlétisme Français Dans L'entre-Deux-Guerres*, In J.-F. Loudcher, C., Vivier, J.N., & Renaud, P., Diestchy (Eds.), *Sport Et Idéologie. Tome 2, ACE-SHS*, 289-300.
- [66] Sampaio, T., Marinho, D., Teixeira, J.E., Oliveira, J., & Morais, J. (2023). Clustering U-14 Portuguese Regional Team Football Players By Lower Limb Strength, Power, Dynamic Balance, Speed And Change Of Direction: Understanding The Field Position Factor. *Peer J*, 11: E15609.
- [67] Saugy, J.J., Drouet, O., Millet, G.P., & Lentillon-Kaestner, V. (2020). A Systematic Review On Self-Determination Theory In Physical Education. *Translational Sports Medicine*, 3(2), 134–147.
- [68] Schneider, C., Rothschild, J., Uthoff, A. (2023). Change-Of-Direction Speed Assessments And Testing Procedures In Tennis: A Systematic Review. *J Strength Cond Res*, 37(9):1888.
- [69] Sgrò, F., Quinto, A.M.V., Lipoma, M. & Stodden, D. A. (2024). Multidimensional Approach To Talent Identification In Youth Volleyball Through Declarative Tactical Knowledge And Functional Fitness. *J. Funct. Morphol. Kinesiol*, 9, 29.
- [70] Sgro., F., Barca, M. Mollame, F., Orofino, F., Quinto, A. & Stodden, D. (2024). The Impact Of Sport-Specific Practice On Health-Related Physical Fitness Components In Young Water Polo And Volleyball Athletes. *Appl. Sci*, 2024, 14, 9316.
- [71] Shalash, Najah Mahdi And Mahmoud, & Akram Sobhi. (2000). *Motor Learning*, Dar Al-Kutub For Printing And Publishing, University Of Mosul, Mosul. Muhammad Hassan Alawi And Osama Kamel Rateb: *Scientific Research In Physical Education And Psychology*, (Dar Al Fikr Al Arabi, Cairo, P. 217.
- [72] Sheppard, J.M., Gabbett, T.J & Stanganelli, L.C. (2009). An Analysis Of Playing Positions In Elite Men's Volleyball: Considerations For Competition Demands And Physiologic Characteristics. *J. Strength Cond. Res.*, 23, 1858–1866.
- [73] Silva, A., Clemente, F., Lima, R., Nikolaidis, P., Rosemann, T. & Knechtle, B. (2019). The Effect Of Plyometric Training In Volleyball Players: A Systematic Review. *Int. J. Environ. Res. Public Health*, 16, 2960.
- [74] Smith, J., & Johnson, L. (2021). Designing Effective Physical Fitness Programs For Law Enforcement Officers*. *International Journal Of Sports Physiology And Performance*, 16(4), 567-578.
- [75] Smith, J., Eather, N., Morgan, P.J., Plotnikoff, R., Faigenbaum, A & Lubans, D. (2014). The Health Benefits Of Muscular Fitness For Children And Adolescents: A Systematic Review And Meta-Analysis. *Sports Med*, 44, 1209–1223.
- [76] Sponselee, H.C.S., Kroeze, W., Poelman, M.P., Renders, C.M., Ball, K., & Steenhuis, I.H.M. (2021). Food And Health Promotion Literacy Among Employees With A Low And Medium Level Of Education In The Netherlands. *BMC Public Health*, 21(1273), 1–11.
- [77] Stodden, D., Langendorfer, S., & Robertson, M.A. (2009). The Association Between Motor Skill Competence And Physical Fitness In Young Adults. *Res. Q. Exerc. Sport*, 80, 223–229.
- [78] Strobl, H. (2019). Theoretical Underpinnings Of Interventions That Effectively Promote Physical Activity In Adult Men. *German Journal Of Exercise And Sport Research*, 4(2).
- [79] Tortella, P., Quinto, A., Fumagalli, G.F., Lipoma, M., Stodden, D. & Sgrò, F. (2023). Effects Of Different Teaching Approaches On Proxy Measures Of Physical Fitness Of Italian Kindergarten Children. *Int. J. Environ. Res. Public Health*, 20, 5792.
- [80] Tsao, J-P., Liu, C-C., & Chang, B-F. (2022). Application Of The Motor Abilities Assessment As Part Of A Talent Identification System In Tennis Players: A Pilot Study. *Int J Environ Res Public Health*, 19(15):15
- [81] Wang, L., Shang, F., & Kong, D. (2022). An Image Processing Method For An Explosion Field Fireball Based On Edge Recursion, *Measure. Sci. Technol.*, 33.
- [82] Warneke, K., Konrad, A., Keiner, M., Zech, A., Nakamura, M.; Hillebrecht, M. & Behm, D.G. (2022). Using Daily Stretching To Counteract Performance Decreases As A Result Of Reduced Physical Activity-A Controlled Trial. *Int J Env. Res Public Health*, 19, 15571.
- [83] WEINECK, J. (1983). *Manuel D'entraînement*. Paris, Vigot.
- [84] Włodarczyk, M.; Adamus, P.; Zieliński, J.; Kantanista, A. (2021). Effects Of Velocity-Based Training On Strength And Power In Elite Athletes—A Systematic Review. *Int. J. Environ. Res. Public Health*, 18, 5257.