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ORIGINAL

PERCEPTION OF MILITARY SPECIALISTS ON PHYSICAL PREPARATION IN THE ARMED FORCES

PERCEPCIÓN DE LOS ESPECIALISTAS MILITARES SOBRE LA PREPARACIÓN FÍSICA EN LAS FUERZAS ARMADAS

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ABSTRACT

This work analyzes the perception of military specialists in Physical Education on how physical preparation is implemented and could be optimized in the Armed Forces. It is a quantitative, descriptive study (N = 227) having created an ad hoc questionnaire to collect these perceptions. The results indicate that the facilitators believe that: i. The current physical preparation and its evaluation bear little relation to the possible operational contexts; ii. Health and military instruction are perceived as the main training objectives; iii. The traditional training methodology does not seem to be the most suitable to achieve the operational objectives of the Units; iv. The most relevant physical qualities are swimming skill, strength, and endurance; v. The training contents during the mesocycle are still based mainly on running and calisthenics, performed at a moderate intensity; vi. Specific preparation before, during and after Operations should be increased.

KEY WORDS: military personnel, physical preparation, training periodization, surveys.

RESUMEN

Este trabajo analiza la percepción de diplomados militares en Educación Física sobre cómo se implementa y podría optimizarse la preparación física en las Fuerzas Armadas. Es un estudio cuantitativo, descriptivo (N = 227) habiéndose creado un cuestionario ad hoc para recoger estas percepciones. Los resultados señalan que los diplomados opinan que: i. La preparación física actual y su evaluación tienen poca relación con los posibles contextos operativos; ii. La salud y la instrucción se perciben como los principales objetivos formativos; iii. La metodología tradicional del entrenamiento no parece ser la más idónea para conseguir los objetivos operativos de las Unidades; iv. Las cualidades físicas consideradas más relevantes son competencia en agua, fuerza y resistencia; v. Los contenidos de entrenamiento durante el mesociclo se siguen basando fundamentalmente en la carrera y la calistenia, realizados a una intensidad moderada; vi. Debe incrementarse la preparación específica antes, durante y después de las Operaciones.

PALABRAS CLAVE: personal militar, preparación física, periodización del entrenamiento, encuestas.

1. INTRODUCTION

The Spanish Armed Forces (SAF), made up of the Navy (RN), the Army (A) and the Air Force (AF) have their missions regulated in the Spanish Constitution (article 8), the Organic Law of National Defence (LO 5 / 2005) and Royal Decree 872/2014. Among them are those of collaborating in the maintenance of peace and stability, humanitarian aid and ensuring the security and well-being of citizens (Ministry of Defence [MD], 2021b). For these purposes, the military is currently deploying on four continents, carrying out 17 operations abroad; they have also recently participated in climate and health emergencies (MD, 2021a).

Thus, it is found that soldiers must perform tasks with a high degree of psychophysical demand in very varied settings -with different weather conditions, unexpected actions, etc.- (Tomes et al., 2020); In addition, the mode of employment of the units and the structure differs depending on each army, which determines a very high specialization (MD, 2018).

The three armies are articulated similarly, configuring themselves in units. The physical preparation (PP) necessary to successfully undertake the assigned missions is the responsibility of each Commander, who has a staff specialized in physical education (Gonzalez, 2015). In a very generic way, specialists with jobs from Sergeant to Captain have a direct implication in the PP of their soldiers, being the higher ranks (from Mayor to Lieutenant Colonel) those in charge of supervision and advice, as is the case in most of the Western Armies

(Schulze et al., 2015). The Central School of Physical Education of the Army (ACSPE) is responsible for training all specialized personnel in the field of PP of the Armed Forces and State Security Forces and Corps (SSFC), as well as advising at a higher level in those relevant aspects related to said PP (Coba, 2019).

The training given includes everything that surrounds the general and specific training of soldiers, which must lead to ensuring an adequate physical condition and, as in any other sports specialty, is characterized by a planning process that includes determining the objectives, the performance profiles, the temporal scope, the periodization, the control and the evaluation of the training (Granell and Cervera, 2006).

This training aimed at the military, called “tactical athletes”, a concept that emerged in the United States (Scofield and Kardouni, 2015), has evolved since 2010. Armies of the United States, Canada, and Australia –over all- promote that the PP of the soldier increasingly resembles combat actions (training objective), rather than mere maintenance of the basic physical condition. This has resulted in the search for standards (performance factors or determining physical qualities) that allow the soldiers to be discriminated against and assign them a tactical position appropriate to their capabilities (Spiering et al., 2021), in addition to rethinking the planning model (Nevin, 2018). In Spain, after the professionalization of our SAF, periodic tests were introduced (MD, 2014) to assess physical condition. However, as in many other NATO countries, these tests suffer from the specificity referred to above (Canino et al., 2019). Although data are published annually on the brands obtained by the different Units, it is unknown whether the periodization is efficient or what model is followed.

As mentioned previously, many of the operations take place abroad or are supervening. Authors such as Haff (2017) relate the periods of the traditional methodology with the different moments of the mission (preparatory period as pre-deployment, competitive as deployment and transition as post-deployment), so it is essential to know if this strategy is carried out and in what way on the ground.

For these reasons, this study aimed to analyse the perception of military specialists belonging to two categories (based on their greater or lesser proximity to the soldiers), on specific aspects of the PP of military units such as: specificity of training, physical qualities, periodization, control and evaluation of the physical condition and PP in Operations.

2. MATERIAL AND METHOD

A descriptive quantitative methodology was used, using a questionnaire as an information-gathering instrument. The present study focused on the criteria validity values obtained from the discussion group of professionals who have intervened in it. The population was made up of active military specialists in Physical Education, including personnel belonging to the Civil Guard and the National Police Corps (State Security Forces and Corps - SSFC -).

All those whose email addresses appeared in the ACSPE database, as a centre of specialization, were included in the study; finally, the SSFC components were excluded as it was not possible to obtain data relative to the total specialists and active population.

The study was carried out according to the Declaration of Helsinki. The participants were informed in the introduction of the questionnaire itself that it was anonymous and that the data were only going to be used for the research, giving them to understand that by responding they freely gave their consent to participate in the study; It was ensured that all the information provided would be treated confidentially according to the regulations of LO 15/1999 on the Protection of Personal Data.

The questionnaire was sent to 1000 people, including the military, civil guards, and national police. 252 responded to the questionnaire, of which 227 (military) were finally selected. Only the respondent's attitude towards physical activity was considered, regardless of gender, age, or other anthropometric characteristics. The resulting training profile is shown in Table 1.

Table 1
Sample training profile

		Maj. to LtCol.	Sgt. to Cap.	Total
Perform AF in your spare time	YES	51 (25%)	154 (75%)	205 (90,3%)
	NO	4 (18,2%)	18 (81,8%)	22 (9,7%)
	Total			227
Weekly training hours	2 to 3	2 (16,6%)	10 (83,4%)	12 (5,3%)
	4 to 6	36 (28,6%)	90 (71,4%)	126 (55,5%)
	>= 7	17 (19,1%)	72 (80,9%)	89 (39,2%)
	Total			227

Note: (LtCol.: Lieutenant Colonel, Maj.: Major, Cap.: Captain, Sgt.: Sergeant).

A questionnaire was prepared ad hoc using the “google questionnaires” program (<https://www.google.es/intl/es/forms/about/>). The questions were closed, polytomous and scale, using a Likert-type graphic scale from one to 10 in the latter (Lopez-Roldan and Fachelli, 2016); initially it consisted of 48 questions. A discussion group formed by four military professors assigned to the ACSPE with experience in research methodology was held to determine the most relevant items in the study. Each teacher assessed each item on a scale from 1 to 5. Those whose mean score was greater than or equal to 4 were included. Of the 48 initial questions, finally, the 17 that met this criterion were selected ($M = 4.68$), being grouped into the following thematic blocks:

1. Specificity of training regarding psychophysiological demands.
2. Determining physical qualities for military specialists.
3. Perception of specialists on the periodization, control, and evaluation of the physical condition.

4. Opinion of specialists on PP in military operations.

The collaboration of the participants, all of them military specialists in PP, was requested with a formal and personalized letter from the Director of the ACSPE to achieve the highest possible response rate (Fernandez et al., 2009). The sampling was therefore incidental.

The variables analysed about physical preparation in the military context were grouped into the following categories: a. Specificity of training; b. Physical qualities; c. Training planning (objective, programming - contents of the mesocycle and session - and evaluation) and d. Physical preparation in Operations.

Data were processed and analysed with the statistical program SPSS, version 22.0 for Windows. A 95% confidence index (CI) was considered. The Kolmogorov-Smirnov test was used to verify the normality of the data and the Mann-Whitney t-student and U tests (based on the normality results obtained) for the comparison between the mean evaluations of the two groups of military specialists. In addition, the effect size was calculated using Cohen's d (0.2 = low, 0.5 = medium and 0.8 = high), in case there were significant differences (Sanchez-Meca et al., 2011).

3. RESULTS

The response rate was 23.84%.

The answers obtained in the questions related to the specificity of the training and the physical qualities are reflected in Table 2.

Table 2. *Training specificity and physical qualities*

Item	M ± SD	Maj. to LtCol.	Sgt. to Cap.	Sig.
Specificity				
Relationship of the PP with the Instruction	4,94 ± 2,49	5,38 ± 2,63	4,8 ± 2,43	0,169
Existence of a simulated combat test that assesses physical ability	4,44 ± 2,55	4,05 ± 2,47	4,56 ± 2,57	0,198
More operational units should spend more time on PP	8,32 ± 2,45	8,16 ± 2,53	8,36 ± 2,42	0,594
Qualities				
Swimming skill	7,56 ± 1,91	7,29 ± 2,21	7,65 ± 1,81	0,226
Strength	7,36 ± 2,59	7,44 ± 2,39	7,29 ± 2,65	0,718
Endurance	7,29 ± 2,62	7,27 ± 2,43	7,30 ± 2,68	0,942
Coordination	7,14 ± 2,57	7,13 ± 2,29	7,14 ± 2,66	0,964
Agility	6,99 ± 2,51	6,96 ± 2,39	7,00 ± 2,56	0,914
Balance	6,35 ± 2,44	6,21 ± 2,11	6,40 ± 2,54	0,630
Speed	6,13 ± 2,43	5,91 ± 2,25	6,19 ± 2,49	0,445
Flexibility	6,10 ± 2,53	5,93 ± 2,21	6,15 ± 2,63	0,560

Note: (M: media, SD: deviation standard, LtCol.: Lieutenant Colonel, Maj.: Major, Cap.: Captain, Sgt.: Sergeant). Values refer to the Likert scale of 1-minimum value according to the question posed - to 10-maximum-.

The military specialists of one group and the other do not present significant differences in their opinions regarding the specificity of the training ($p > 0.05$ in all cases).

Regarding the qualities analysed, they also give them a similar importance, highlighting slightly the competition in water, strength, and endurance, in this order (observing the general average -M-).

The results obtained from the analysis of the objective, programming and evaluation of the PP are reflected in Table 3.

Table 3. Military training planning

Item	M ± SD	Maj. to LtCol.	Sgt. to Cap.	Sig.
Objective				
Health	7,64 ± 2,65	7,51 ± 2,53	7,68 ± 2,69	0,667
Complementary to military training	7,25 ± 2,61	7,56 ± 2,77	7,15 ± 2,56	0,309
Psychological well-being	7,19 ± 2,57	7,14 ± 2,59	7,20 ± 2,58	0,885
Avoid injury	7,14 ± 2,60	7,18 ± 2,57	7,12 ± 2,61	0,882
Group cohesion	6,82 ± 2,69	6,36 ± 2,48	6,84 ± 2,60	0,884
Appearance or external image of the military	6,69 ± 2,64	7,13 ± 2,29	6,79 ± 2,68	0,290
Pass tests	5,68 ± 2,88	4,60 ± 2,33	6,03 ± 2,95	0,001*
Programming				
Is the weekly schedule dedicated to PP enough?	5,87 ± 2,73	5,78 ± 2,94	5,90 ± 2,66	0,778
Is the PP carried out in the units motivating?	5,43 ± 2,59	5,87 ± 2,57	5,29 ± 2,58	0,151
Degree of compliance	4,67 ± 2,38	5,09 ± 2,45	4,54 ± 2,34	0,136
Is the traditional methodology adequate?	4,59 ± 2,23	4,58 ± 2,38	4,59 ± 2,18	0,974
Is the ratio of specialists / staff adequate?	3,84 ± 2,59	3,58 ± 2,33	3,92 ± 2,66	0,394
Evaluation				
Are the tests applied to assess PP adequate?	4,81 ± 2,56	4,74 ± 2,16	4,83 ± 2,67	0,829

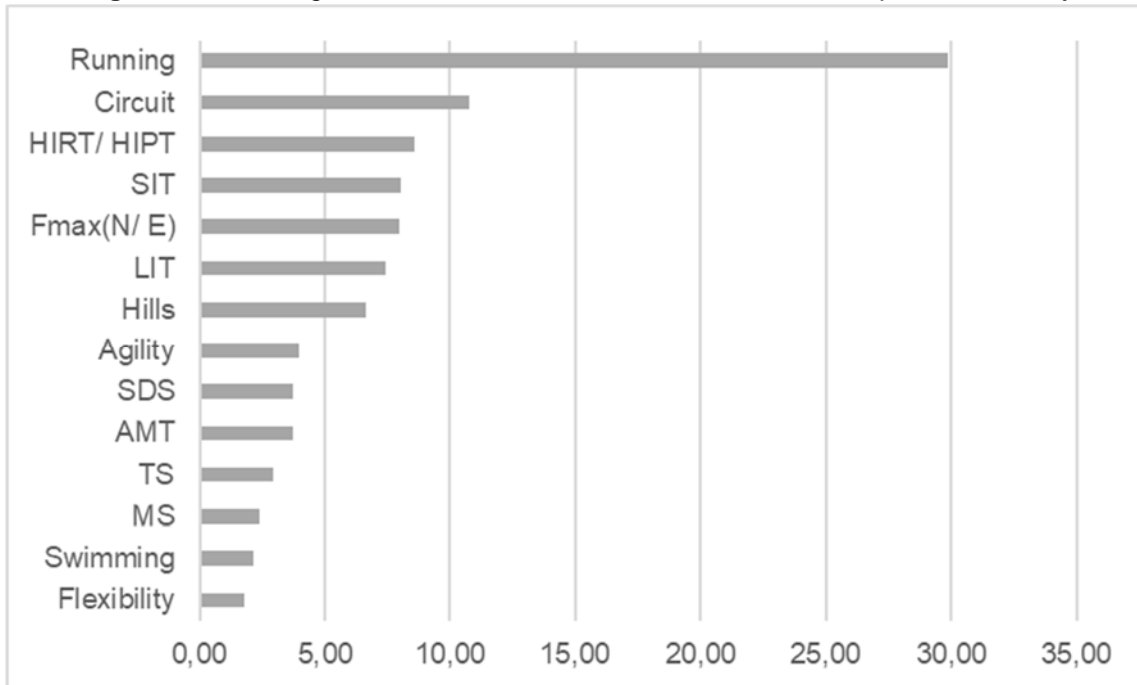
Note: (LtCol.: Lieutenant Colonel, Maj.: Major, Cap.: Captain, Sgt.: Sergeant). Values refer to the Likert scale of 1-minimum value according to the question posed - to 10-maximum-; * $p < 0,05$.

Regarding the objective to which the FP of the Units should be oriented, both groups give the highest value to health, followed by the complement to instruction; the least valued in general is passing the FP test, although in this item there are significant differences between both groups and a moderate relevance ($p < 0.05$, $d = 0.54$), indicating those belonging to jobs from Sergeant to Captain that this seems to be of greater importance than the group of superior jobs gives it. Analysing the programming and evaluation of training, there are no significant differences between both groups.

Related to some of the items presented in Table 3, especially programming, several questions were also raised:

- On the structure of a typical mesocycle. In this section, respondents were asked to count 15 consecutive training sessions, specifying the content of the fundamental part. The results are shown in Figure 1.

Figure 1. Percentage distribution of the content of the fundamental part in a mesocycle



Note: Circuit (callisthenics), HIRT/ HIPT (high-intensity concurrent training), SIT (short interval training), Fmax N/E (strength), LIT (long interval training), SDS (self-defense sports), AMT (application military tasks), TS (team sports), MS (military sports).

Most of the training sessions carried out are based on running (continuous at low intensity - standing out over the other methods -, intervals and hills), with a total of 51.96% of the sessions; strength training (circuit and strength / E) accounts for 18.72% of all sessions and concurrent high intensity training (which mainly encompasses strength and endurance) 8.56%. The rest of the tasks together represent the remaining 20.75%.

- On the number of sessions per microcycle (week) and the intensity of the sessions

According to the respondents, most of the Units carry out between 3 and 5 weekly sessions (almost 30% carry out less than 3) at an eminently moderate intensity (60.4%), understood as “that activity in which it is possible to maintain a conversation, breathing more intensely than normal” (Barrera, 2017).

The last of the thematic blocks was on FP in Operations (maneuvers, international missions, etc.). The responses corresponding to this aspect are reflected in Table 4.

Table 4. PP in Operations

Item	Maj. to LtCol.	Sgt. to Cap.	Sig.
Importance of PP in prior preparation	7,87 ± 1,86	8,13 ± 1,82	0,360
Need for PP during Operations	8,71 ± 1,18	8,42 ± 1,84	0,283
Physical condition of the personnel after the Operation	5,13 ± 1,95	5,72 ± 2,37	0,095

Note: (LtCol.: Lieutenant Colonel, Maj.: Major, Cap.: Captain, Sgt.: Sergeant). Values refer to the Likert scale of 1-minimum value according to the question posed - to 10-maximum-.

Within this block, another item referred to the number of weekly hours dedicated to PP, showing that most of the responses indicated that 2 to 3 are usually performed (57.3%). Both groups also agree in their opinions on PP before, during and after the Operation, without significant differences.

4. DISCUSSION

This study was designed to analyse the perception of military specialists in PP on aspects related to it since, although this issue has been dealt with mainly by professionals dedicated to teaching school-age students (Del Valle et al., 2015; Hortigüela et al., 2017) or High Performance (Filgueira Perez, 2015), this is the first time that it has been carried out in the environment of the Armed Forces.

Regarding the specificity of the training, the majority opinion of the military specialists is that PP bears little relation to the training of the combatant. The results coincide not only with the current trend in Western armies, but also with what is a common practice in the world of sports (Suarez-Rodriguez and Del Valle, 2019). Several studies carried out in neighbouring countries already indicate the necessary introduction in PP sessions of tasks related to those carried out on a regular basis by soldiers (Burdon et al., 2019).

Respondents' responses also highlight the absence of a test with sufficient sensitivity and specificity to evaluate combat action as much as possible; In this sense, studies such as those carried out by Peterson (2015) or Pihlainen et al. (2018) already showed the little correlation between the tests most used by Western armies and the fundamentally anaerobic demand for most of the actions carried out in a hostile environment.

The results also indicate the need for more operational units to train longer than support units; however, although it would seem the most logical thing, it coincides with a widely extended assumption among the military Commanders, but with little consistency, as demonstrated by Teyhen et al. (2018) in an analysis of the injuries that occurred in both units.

In the 4th Congress held on the physical performance of the soldier, one of the topics that generated the greatest consensus was that of what physical qualities were the most relevant for a military; participants agreed to point out strength, power, and endurance as the most determining factors in successfully tackling the specific tasks of a soldier (Lovalekar et al., 2018). The opinions collected in this study coincide with the conclusions of said Congress. Regarding swimming, no recent analyses have been found that highlight the importance of soldiers

being able to move around in this environment; however, it was one of the lessons learned in World War II (Sprandel, 1945). Although swimming is shown as one of the concerns of specialists, in the SAF it ceased to be assessable in 2014 in general (MD, 2014), although they continue to train in certain specialized units and, of course, in the Navy.

Regarding the planning of military training, the respondents seem to think that the fundamental objective of PP should be health, possibly because the average age of the personnel has been gradually increasing. This aspect does not coincide with the majority of studies on this matter, which indicate the training or efficiency of the military as a priority aspect (Davis, 2011; Larcom et al., 2015; Larsson et al., 2020).

There is some discrepancy on which methodology is most effective in preparing soldiers to successfully carry out the demands of the battlefield, although it is recommended that traditional periodization be used for recruits (Orr and Pope, 2015), employing a periodization of blocks for soldiers already assigned to their units (Abt et al., 2015; Lester et al., 2014; Stone et al., 2020); In this sense, the respondents seem to agree with this trend, possibly because the majority of graduates belong to units not dedicated to initial military training.

Analysing the smallest units of periodization (microcycle and session), it is observed in this study that the first ones are usually between 3 and 5 sessions and that the largest number of these tend to be dedicated above all to moderate intensity running and performing of calisthenics circuits, coinciding with the data presented in numerous studies (Gibala et al., 2015; Kyröläinen et al., 2018; Szivak and Kraemer, 2015); furthermore, the general opinion is that the planning does not seem to have a high degree of compliance. Ojanen et al., (2020) point out this aspect as one of the main problems when conducting a prolonged study in this population.

Little evidence has been found on the benefits of having PE-certified military personnel dedicated to the physical preparation of soldiers. For example, for health and fitness training, Baechle and Earle (2007) stipulated a ratio of trainers / trained of 1:50. Currently the approximate number of military specialists in PP is one thousand, considering that the Armed Forces are made up of 130 thousand troops (MD, 2021c), the ratio is 1:130. In Spain, employment related to sports represented a total of 208 thousand people in 2020 (Ministry of Culture and Sports, 2020) and the target population - of military age, between 18 and 65 years old - was approximately 26.5 million (Statistics National Institute, 2020); the hypothetical ratio -supposing that all that employed personnel was exclusively dedicated to physical preparation- would be similar to that of the population.

4.1. Limitations of the study

As with many of the surveys sent via email, the main limitations of the study have been the impossibility of solving doubts in any of the questions posed,

especially concerning the contents of the PP sessions, and the possible bias of surveyed personnel.

Having prioritized anonymity and speed in the resolution of the questionnaire, another limitation has been not being able to detail other aspects of the sample that could have been important to better analyse the results, such as whether the current destination of the respondents was related to the PP and how many years they had spent on PP-related responsibilities.

5. CONCLUSIONS

The results obtained suggest that the general opinion of the military graduates regarding aspects of the physical preparation of the units is that the relationship between the PP and the military training is weak, affecting the evaluation, which also does not validly measure the capacities to combat, also revealing the non-existence of a specific test adapted to the actions that take place on the battlefield.

Regarding the objective of PP, opinions seem to prioritize for health concerns. The traditional training methodology does not seem to be the most suitable for the Units and the degree of compliance does not seem desirable either.

Regarding the physical qualities, no conclusion has been reached about whether one or another should be enhanced, although the most relevant seem to be competition in water, strength and endurance. The training contents during the mesocycle are still based mainly on running and calisthenics, performed at a moderate intensity.

Regarding special situations in which a military may be involved (maneuvers, support operations to guarantee the security and well-being of citizens, operations to maintain stability and international peace), the need to increase preparedness is appreciated. specific before, during and after to carry them out successfully.

It would be advisable to extend this questionnaire to the rest of the Commands of the Large Units of the SAF, to contrast the opinion between PP specialists and non-graduates, discriminating between those belonging to each of the organizational structures.

Future studies should influence a possible improvement and periodic repetition of the survey to analyse the evolution of PP, as this is the first of its kind carried out in our SAF. A possible practical application of the results obtained in this study could materialize in the implementation of a training program based on undulating block periodization, with the introduction of concurrent tasks (which include all physical qualities in a balanced way) of high intensity based on specific activities of the military, with an evaluation according to this approach.

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