

Influence of Physical Exercise in the Perception of Back Pain in Spanish Fighter Pilots

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Carbayo Herencia, J.A.; Jiménez Prada de Miguel, L.; Peyró García, R.; Alonso Rodríguez, C.; Velasco Díaz, C.; Hernández Abadía de Barbará, A. (2005) Influence of Physical Exercise in the Perception of Back Pain in Spanish Fighter Pilots. In *Strategies to Maintain Combat Readiness during Extended Deployments – A Human Systems Approach* (pp. 20-1 – 20-6). Meeting Proceedings RTO-MP-HFM-124, Paper 20. Neuilly-sur-Seine, France: RTO. Available from: <http://www.rto.nato.int/abstracts.asp>.

1.- INTRODUCTION

Back pain is one of the most frequent problems in fighter pilots. A good physical fitness is necessary in order to improve the tolerance to the high-G + environment where fighter pilots are so often involved. Physical training is absolutely essential as a part of the daily activities of these pilots. However this habit is not completely consolidated among the pilot population. Among the many benefits of physical training, the increment in the pain threshold in people practising regular exercise has been considered by different authors. So we can expect that pilots who practice regular exercise will perceive back pain with a lower intensity.

This study has a double aim:

- a) to assess the prevalence of fighter pilots performing physical training in Albacete A.F.B.
- b) to assess if physical training has any influence on the intensity of back pain perceived by the pilots

2.- SUBJECTS AND METHOD

This is a cross-sectional, analytical and observational study. The questionnaire was administered with open questions and grouped in thematic areas. The questions were simple, clear and neutral. In order to be sure that the questions were clearly understood a pre-test was applied to five individual with satisfactory results.

Qualitative variables are expressed as an exact value and as percent. Quantitative variables are expressed as mean and standard deviation. Mann-Whitney test was used for comparison between means. The level of maximum alfa error was stated as $< 5 \%$.

Table 1: Questionnaire

A.- Professional data

Age:

Total number of flight hours:

Flight hours in the following aircrafts:

- *C-101 (E-25)*
- *F-5 (AE-9)*
- *F-1 (C-14)*
- *Any other*

Years of service:

Years stationed in Albacete AFB

3.- RESULTS

33 pilots were studied (85 % of pilots assigned at the Wing 14 at that moment). All of them were males with a mean age of 30.7 years (SD= 4.5); 10.4 years of activity as pilots (SD=4.5), and 3.9 years stationed in Albacete AFB.

85 % of participants reported to have experienced back pain occasionally. Lumbar-sacral region was the most affected area. (68 %), followed by the cervical region (64 %), general back pain (39 %) and thoracic region (25 %).

Regarding physical fitness, 45.5 % of pilots conducted some kind of sport 3.2 times per week (SD = 1.6), with an average of 3.3 hours per week (SD = 2.2). Running was the most common activity (87 %). Table 2 shows that there are not significant differences regarding age or professional characteristics between pilots who perform exercise and those who do not. Table 3 depicts the number of participants and the difference in pain intensity related to those who practice exercise and those who do not.

Table 2. Practice of exercise by the groups of pilots studied

	Pilots conducting physical training (SD) n=15	Pilots NOT conducting physical training (SD) n=18	P
Age (years)	29.4 (3.4)	31.7 (3.4)	NS
Total flying hours	1358.7 (912.2)	1741.7 (763.2)	NS
Flying hours in C-101 (E-25)*	566 (552.3)	621.8 (575.1)	NS
Flying hours in F-5 (AE-9)*	161 (205.3)	205.0 (221.5)	NS
Flying hours in F-1 (C-14)*	478.1 (363.4)	779.7 (711.3)	NS
Flying hours in other aircrafts (n=22)	172.7 (131.3) n=11	163.2 (133.8) n=11	NS
Total time of active duty (years)	9 (3.7)	11.6 (4.8)	NS
Total time stationed in Albacete AFB (years)	3.1 (2.3)	4.5 (4.0)	NS

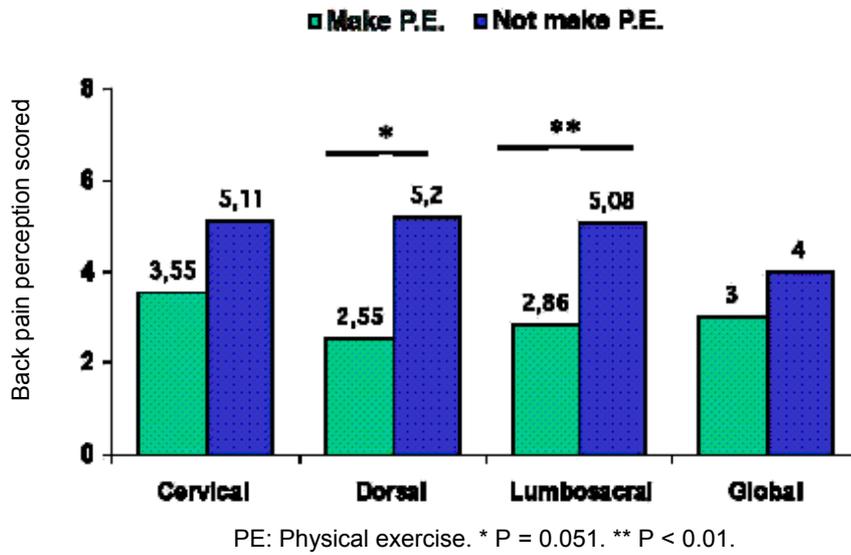
SD: Standard Deviation. n: number of participants. NS: Not significance. * Spanish Denomination of aircrafts.

Table 3. Intensity of back pain perceived by the pilots in the different regions of the spine. Comparison between pilots conducting and pilots not conducting physical training.

Pain location	Mean (SD)	Pilots conducting physical training (SD)	Pilots NOT conducting physical training (SD)	P
Cervical (n=18)	4.3 (2.1)	3.6 (2.0) n=9	5.1 (2.0) n=9	NS
Thoracic (n=7)	4.4 (1.7)	2.5 (0.7) n=2	5.2 (1.3) n=5	= 0.051
Lumbar-sacral (n=19)	4.3 (1.9)	2.9 (0.9) n=7	5.1 (1.8) n=12	< 0.01
Global back pain (n=11)	3.6 (1.4)	3.0 (1.4) n=4	4.0 (1.4) n=7	NS

SD: Standard Deviation. n: number of participants. NS: Not significance.

Figure 1. Score of back pain perception. Pilots conducting physical training versus pilots not conducting physical training



DISCUSSION AND CONCLUSIONS

Although the study presents limitations such as the small size of the sample as well as the lack of information about the intensity of the exercise, considering the homogeneity of the population studied, we may conclude that the practice of exercise is a determinant factor in preventing the back pain among fighter pilots.

These data support the beneficial effects of regular exercise among fighter pilots in relation to the back pain perception. This fact may enhance the fighter pilots performance in air missions during extended deployments.

Further studies including a larger population and more detailed information about type of training should be conducted.

