15 - PHYSICAL FITNESS LEVELS OF SOLDIERS INCORPORATED INTO THE 33rd MOTORIZED INFANTRY BATTALION AFTER THE ESTABLISHMENT OF A TRAINING PROGRAM

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INTRODUCTION

All considered fit for military service are required to do the army physical training. The difficulties that precede the ideal physical training are well-known, which range from lack of time, from the several other priority activities in Military Organization, the lack, or even the inexistence of places, facilities or suitable materials.

An important way of keeping control of a training for both, athletes or non-athletes, is the monitoring of body composition (BOMPA, 2002)

Generally speaking, physical fitness means the capacity and the performance of a human being, as well as the current disposition for a particular area. This general definition includes all the personality dimensions and fields of action and also leaves the aim open. Therefore, the term physical fitness represents only "the state of being fit" for any goal. Only with the addition of appropriate adjectives an accurate definition can be achieved (WEINIECK, 2003).

It is worth emphasizing that, those who practice sports regularly since youth, know relatively well their ability of personal performance, as well as how much they can stand and also know their limits (WEINIECK, 1999).

According to Leite (2000), physical fitness is divided in two groups of parameters or skills: Physical fitness related to health and motor or athletic fitness. The five components of physical fitness linked to health are: aerobic endurance, local muscular endurance, muscular strength, flexibility and body composition. The parameters such as speed, muscular power, agility, neuromuscular coordination, reaction time and balance are related to "motor fitness".

According to Guedes (2003), the concept of physical fitness linked to health, requires the participation of components associated to morphological, motor functional, physiologic and behavioral dimensions of the person.

The Army Physical Training has also two approaches: the operational and health. Obviously the operational approach is more evident in functions related to combat mission accomplishments, while the focus of health is essential for the development of any function, including the ones of administrative matters. Therefore, it is vital to understand the army physical training as a health provider instrument, rather than an army training (BRASIL, 2002).

People who practice regular physical activities, according to Nieman (1999), improve their basic energy levels and put themselves in a group with lower risks of presenting heart diseases, cancer, diabetes, osteoporosis and other chronic diseases. However, he highlights that health is not just the absence of diseases, but it is defined as a state of complete physical, mental, social and spiritual well-being.

The progression of physical exercises can occur in two different ways: as an isolated one, or through the combination of the increase in the amount of activities in each section of the program or the increase in intensity of the activities to be carried out (GUEDES, 2003).

The army physical training is composed of cardiopulmonary and neuromuscular trainings. Cardiopulmonary training is the joint of planned, structured, repetitive and controlled physical activities, which aims the development and maintenance of cardiopulmonary fitness, such as the continuous running and swimming, while the neuromuscular training is a physical activity of varying intensity, carried out by isolation or resistance exercises, which aim to develop muscle strength and resistance (BRASIL, 2002).

The motivation for this study was based on the search of expanding scientific knowledge and benefiting the society involved, once that, through the obtained results, confrontations with other studies can be made, causing better conclusions, and being possible to inform commanders of several levels, regarding planning, organization and execution of the army physical training in its Military Organizations, and also warn the soldiers so that, they can prepare in an accurate and appropriate way.

With the facts above, this study aimed to evaluate the levels of physical fitness through a training program in soldiers who joined in 2006 and are part of the 33rd Motorized Infantry Battalion, in the city of Cascavel Parana.

MATERIALS AND METHODS

Descriptive and semi-experimental study carried out with a pre and post evaluation in the year of 2006 in the city of Cascavel, West of Parana South of Brazil.

Regarding ethics aspects, first an informative letter was sent to the commander of the 33rd Motorized Infantry Battalion explaining the reasons for the research, and also an Informed Consent document, which was signed by the commander, together with the obtained archived data of the Battalion. This data is from the Physical Fitness Test (PFT) carried out by the soldiers who incorporated in the year of 2006. The research was approved according to the concept number 053/2007 from the Research Ethics Committee of Assis Gurgacz College.

The present research was carried out in the sports complex of the 33rd Motorized Infantry Battalion in Cascavel Parana.

The population of this research was composed of all the soldiers from 33rd Motorized Infantry Battalion joined in 2006, when 230 soldiers were incorporated, and which 113 belonged to the 2nd Fusiliers Company, and the sample is constituted in the evaluation of 81 soldiers aged between 18 and 19 years old, during the months of April and December.

The physical fitness of the recruits was verified through the PFT conducted according to the Decree #223-EME, from the 23rd of December of 2005, in the Battalion sports complex. PFT is composed of cardiorespiratory capacity (12-minute-long run), resistance (pull-up, push-up and sit-up), and in addition, weight and height were also evaluated.

Total body mass was measured in kilograms, using a Filizola digital scale, with a precision of 100 gram and capacity up to 150kg. Height was measured using a Seca height measurer, with scale of 0 to 2,20 meters and precision of 0,1 centimeter.

The measures of body weight and height in pre and post assessment were conducted in the sanitary formation of the Battalion during the 6th week of instructions to the recruits incorporated in the year of 2006 and after the accomplishment of the last PFT in the 32nd week of instructions of the same year, in December.

The body composition pre and post assessment was determined through the Body Mass Index (BMI), being

determined by the equation of weight/height^2.

For the accomplishment of the research, soldiers from the 33rd Motorized Infantry Battalion which incorporated in 2006 were included. 32 soldiers that had been dismissed by the Battalion's doctor at the first evaluation were excluded, along those who were under disciplinary arrest or arrested at the disposal of justice.

The results of this research were analyzed through the SPSS program version 13.0. to compare data pre and post assessment, the percentage of the obtained results was calculated and it was used the chi-squared test to verify the association among the variables. The significance level of 5% was adopted for the study.

RESULTS AND DISCUSSION

Through the results obtained in this study, it was observed that in PFT the recruits incorporated in the 33rd Motorized Infantry Battalion had statistically significant improvements in relation to run, push-up, sit-up and pull-up. Regarding the correlation between BMI and PFT, there was an association, that is, the same way there were improvements in PFT, there were also changes in BMI.

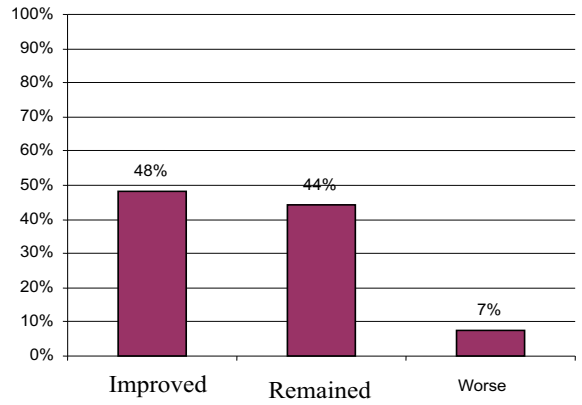
PFT is an activity that includes several tests which are conducted at the army with the same different concepts in relation to its classification that is divided in 5 grades: Excellent, Very Well, Good, Regular and Insufficient.

The army physical training program consists of simplified schemes which facilitate the training planning during the year of instruction, with daily 90-minute section with an ideal of 5 weekly sections, composed of running exercises, sit-ups, pull-ups, push-ups, stretching and warming (BRASIL, 2002). According to Freck and Kraemer (1997), for basic conditioning, the program should last at least from 15 to 60 minutes, performed from 3 to 5 days a week and can be obtained through interval training.

It is important to draw attention to the fact that the training program completed the minimum recommended by literature, even with the comments made by Brasil (2002) where are presented the difficulties that precede the ideal physical training, which can range from lack of time, facing the several other priority activities from the Military Organization, to the lack, or even the inexistence of places, facilities and suitable materials.

Regarding the 12-minute run test performed pre and post assessment, the results pointed out that 48% of the recruits improved their levels of physical fitness, 44% remained the same and 7% got worse, according to the following graph:

Graph 1: Results obtained by the recruits between the First and Last PFT in the 12-minute run.



This running test objective is to run as far as possible in 12 minutes. At the end of the test, it is taken note of the distance covered and, even though it is allowed to walk during the test, the examiner must encourage the athlete to cover the distance running (PITANGA, 2004).

According to Hernandes Junior (2002) the aerobic stimulus in a systemic level produces changes in the cardiorespiratory system, improving the oxygen access and circulation of it in the muscles that produce the effort, the pulmonary capacity is altered allowing the increase of VO_2max (maximum aerobic capacity).

In the variable pertaining to the push-ups carried out by the recruits to exhaustion, 51% improved their results between the first and the last PFT, 11% kept the same results from the first and 38% of the recruits got worse.

It was observed that 38% of the recruits ended up getting worse results in comparison to their first assessment. Much can be predicted regarding these results, however, some situations should be stressed here, among them, the various missions which recruits are assigned to do during the year (it is important to emphasize that the second evaluation was held in December) and there is also the possibility of a state of accommodation of recruits, since they are temporary and they are already in the period of being dismissed from the Army, besides some minor injuries at the time of the assessment that can interfere with results.

Concerning push-ups, the assessment is carried out to the point of exhaustion, when it is not possible to properly perform the movements anymore (HERNANDES JUNIOR, 2002).

In the pull-up test performed before and after the assessment, 65% of the recruits improved their performance, 30% kept the same scores and 5% got worse.

As for the results obtained in the study, Bompa (2002) points out that the elevation of the levels of skill and performance will create an improved organization, but certain principles should be taken into consideration, among them, the biological individuality, adaptation, overload, continuity, volume-intensity interdependence, specificity and variability.

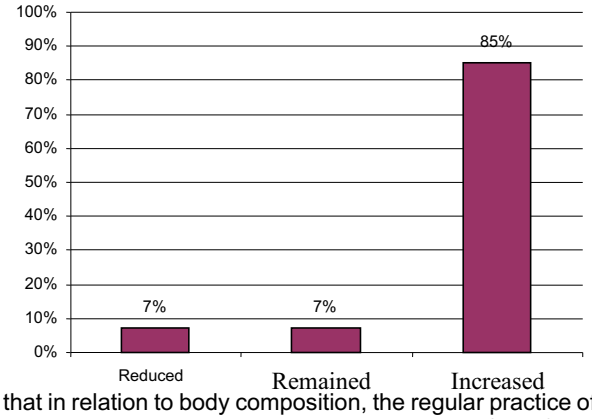
In the sit-up test the highest percentage (48%) of the assessed remained with the same scores, 26% improved their results and 26% got worse.

As mentioned by Hernandes Junior (2002) the sit-up test has the clear objective of verifying the ability of muscles to resist fatigue during the course of successive contractions and is the determining factor of the muscle strength level. Nevertheless, Campos (2002) adds that the abdominal muscles play an important role in postural control and prevention of injury in the lumbar spine.

It is important to note that in the sit-up test, the recruits may have obtained the grade Excellent at both the pre and post evaluation, and as there is no indication provided by PFT Decree, above Excellent, they kept the same scores, as this situation happens with the other tests that were previously reported (12 minute run, push-up and pull-up).

In the results related to BMI in the first and last PFT performed by recruits, 7% reduced their BMI, 7% remained with the same scores form the pre evaluation and 85% had an increase in this composition.

Graph 2: results obtained by the recruits related to the BMI before and after the assessment.



Brazil (2002) mentions that in relation to body composition, the regular practice of military physical training results in reduction of body fat, when combined with a balanced diet. Hernandes Junior (2002) reports that nutrition has occupied a prominent place within training programs and should be considered the type of activity performed in accordance with the physiological demands entailed by this activity, different nutritional needs are generated.

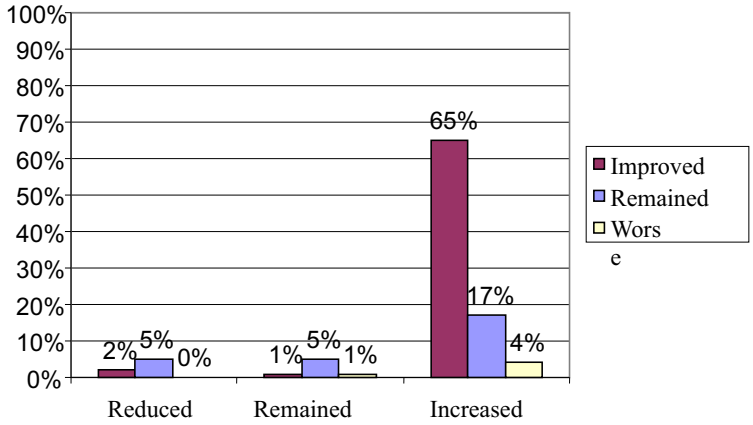
According to Tritschler (2003) the BMI is widely used in studies related to health being considered very informative. However, for young and middle-aged adults its relation to the percentage of body fat is unclear, because the BMI fails to distinguish the body fat and lean body mass.

Literature indicates that both the perspective of epidemiological assessment and the individual diagnosis, can make use of the body mass index (BMI) obtained from the relationship between body weight and height (weight/height^2), since it is a universally accepted measure (ZEFERINO et . Al., 2003).

It should be emphasized that the evaluation of body composition of people has been used extensively as a noninvasive method, low cost and that allows the evaluation of large populations in a short time.

In the correlation of the results of the final statement of PFT and BMI, of the recruits who reduced their body mass, 2% improved their performance in the PFT, 5% remained with the same scores and nobody had a decline in his performance. Of the soldiers who remained with the same body composition, 1% improved their results in the TAF, 5% sustained the same scores and 1% got a decline in their performance. Of those who increased their BMI, 65% achieved better performance in the PFT, 17% kept their score and 4% had a decline in their final performance, as it can be seen in Graph 3.

Graph 3: Correlation between the scores obtained by recruits in the PFT and their BMI.



We highlight that in this research a nutritional monitoring of the soldiers was not conducted, however, all of them have the lunch meal at the battalion headquarters and their food consists mainly of carbohydrates, proteins, lipids and water. Nevertheless, the fact that the recruits' BMI has increased, does not mean an increased in body fat, but possibly their lean mass; this can be seen in the correlation between the final results of the PFT and BMI, where it was observed that 65% of the recruits who increased their BMI, also improved their physical performance, representing that this increase is actually a development of muscle mass.

This study, regarding the period of time between the pre and post assessment, took 08 months, when the recruits performed in 05 sections that ranged from 30 to 90 minutes whenever possible, due to internal affairs and other occasional situations that prevented them from completing the training. However, within this period of 08 months, it was made an effort to prepare them so that they could succeed in the evaluation, as it can be seen in the results.

Regarding training, Weineck (1999) points out that individuals trained after a period of rest and beginners require from 6 to 12 weeks of progressive training to be successful and to move to the next level of intense training free of injuries.

Some important factors which may influence the results have not been evaluated in this study, among them: the practice of physical activity parallel those in the battalion headquarters, the direct monitoring on their food intake, sleeping hours, free time activities and a more detailed assessment of body composition by other procedures which may be more reliable and that could better verify the interference of the training associated with body composition.

Because of this, the researchers suggest that further studies, similar to this (specific population, time of duration and sample size) be made in other units of the Brazilian Army to better interpret the results in relation to the training programs and their direct implications on recruits, considering that physical fitness is an essential feature for the military, where the task delegated to them, in terms of Brazil, is to ensure the constitutional rights, the law and order.

CONCLUSION

Based on the results of the present study, we can conclude that there were statistically significant improvements in the variables of the 12-minute run, push-ups, sit-ups, pull-ups, BMI and final score. There was also a statistically significant difference

between the final scores and the BMI.

It was concluded that the training program implemented over 08 months to recruits entering the 33rd Motorized Battalion of Infantry resulted in improvements in relation to the their physical fitness during the pre and post evaluation.

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PHYSICAL FITNESS LEVELS OF SOLDIERS INCORPORATED INTO THE 33rd MOTORIZED INFANTRY BATTALION AFTER THE ESTABLISHMENT OF A TRAINING PROGRAM

ABSTRACT

All military, due to their profession, should be able to handle stress, stand in action, persist in difficult circumstances and remain in combat. Good cognitive and affective capacities, joined with excellent physical fitness are predominant factors for their success in their actions. The aim of this research was to evaluate the levels of physical fitness through a training program before and after the assessment of soldiers who joined in 2006 and were part of the 33rd Motorized Infantry Battalion, in the city of Cascavel Parana. Semi-experimental study carried out with 81 soldiers, where the weight and height were evaluated, the Body Mass Index (BMI) was obtained through two evaluations and was correlated with the Physical Fitness Test (PFT) which is regulated by the Army General Staff, being these variables the 12 minute run, push-ups, sit-ups and pull-ups. For data analysis of the before and after assessment, a chi-square test with 5% of significance was used. The obtained results pointed out that in every carried-out test, the recruits showed statistically significant improvements. Regarding the 12-minute run, before and after assessment, 48% of the recruits improved their levels of physical fitness, 44% remained with the same levels and 7% reduced their performance. The pull-up variable showed that 65% of the recruits improved their performance in the last PFT related to the first one, 30% remained with the same levels while only 5% reduced their results. Therefore, it was concluded that the training program implemented for the recruits from the 33rd Motorized Infantry Battalion showed improvements compared to their physical fitness during the pre and post evaluation.

Keywords: Army. Recruits. Physical Fitness. Training.

NIVEAUX D'APTITUDE PHYSIQUE DE SOLDATS INCORPORÉS AU 33ème BATAILLON D'INFANTERIE MOTORISÉ APRÈS LA RÉALISATION D'UN PROGRAMME D'ENTRAÎNEMENT

RÉSUMÉ

Tous les militaires, dû leur profession, doivent être dans les conditions de résister au stress, durer dans l'action, persister dans les circonstances difficiles et rester dans le combat.Une bonne capacité cognitive et affective, lié à une excellente aptitude physique sont des facteurs prépondérants pour que les mêmes aient du succès dans leurs actions. L'objectif de cette recherche a été évaluer les niveaux d'aptitude physique au moyen d'un programme d'entraînement pré et ensuite évaluation de soldats qui ont incorporé dans l'année de 2006 et qui ont intégré le 33ème Bataillon d'Infanterie Motorisé, dans la ville de Cascavel - Paraná. Un étude du type semi-expérimental réalisé avec 81 soldats, où s'est évalué le poids et la stature, étant obtenu au moyen des deux évaluations l'Indice de Masse Corporelle (IMC) corrélé avec les résultats du Test d'Aptitude Physique (TAP) qu'est réglementé par l'État-major de l'Armée, étant ces variables la course de 12 minutes, flexion de bras, abdominaux et flexion dans la barre. Pour l'analyse des données pré et ensuite évaluation a été utilisé le test qui-quadrado (*) avec 5% d'importance. Les résultats obtenus ont indiqué, dans tous les essais réalisés, que les appelés ont présenté des améliorations statistiquement significatives. En ce qui concerne la course de 12 minutes pré et ensuite évaluation, 48% des appelés ont amélioré leurs niveaux d'aptitude physique, 44% sont restés avec les mêmes indices et 7% a empiré leur revenu. Dans la variable de flexion de barre, 65% des appelés se sont améliorés quand dans la réalisation du dernier TAP par rapport le premier, 30% sont restés avec les mêmes indices et seulement 5% ont diminué leurs résultats. Donc, s'est conclu que le programme d'entraînement appliqué dans les appelés incorporées dans le 33ème Bataillon d'Infanterie Motorisé a présenté des améliorations par rapport l'aptitude physique des mêmes pendant la pré et ensuite évaluation.

Mots Clé : Armée. Appelés. Aptitude physique. Formation

NIVELES DE APTITUD FÍSICA DE SOLDADOS INCORPORADOS EN EL 33º BATALLÓN DE INFANTERÍA MOTORIZADO TRAS LA REALIZACIÓN DE UN PROGRAMA DE ENTRENAMIENTO

RESUMEN

Todos los militares, por su profesión, deben estar en condiciones de resistir al estrés, mantenerse en la acción, persistir en circunstancias difíciles y permanecerse en la lucha. Una buena capacidad cognitiva y afectiva, ligada a una excelente aptitud física son factores preponderantes para que los mismos tengan éxito en sus acciones. El objetivo de esta encuesta fue evaluar los niveles de aptitud física mediante a un programa de instrucción pre y pos evaluación de soldados que incorporaron en el año 2006 y que integran el 33º Batallón de Infantería Motorizado, en la ciudad de Cascavel Paraná. Estudio

del tipo semi-experimental realizado con 81 soldados, en que se ha evaluado el peso y la estatura, siendo obtenido por medio de dos evaluaciones el Índice de Masa Corporal (IMC) correlacionando con los resultados del Test de Aptitud Física (TAF) que es regulamentado por el Estado-Mayor del Ejército, siendo ésas variables a corrida de 12 minutos, flexión de brazos, abdominales y flexiones en la barra. Para el análisis de los dados pre y pos evaluación fue utilizado el test qui-cuadrado con un 5% de significancia. Los resultados obtenidos apuntaron, en todos las pruebas realizadas, que los reclutas apresentaron mejorías estatisticamente significantes. Referiendose a la corrida de 12 minutos pre y pos evaluación, un 48% de los reclutas mejoraron sus niveles de aptitud física, un 44% permanecieron con los mismo índices y un 7% empeoraron su rendimiento. En la variable flexión de barra, un 65% de los reclutas mejoraron en la realización del último TAF con relación al primero, un 30% permanecieron con los mismos índices y sólo un 5% disminuyeron sus resultados. Así, se concluye que el programa de instrucción aplicado a los reclutas incorporados en el 33º Batallón de Infantería Motorizado ha apresentado mejorías con relación a la aptitud física de los mismo durante la pre y pos evaluación.

Palabras Clave: Ejército. Reclutas. Aptitud Física. Instrucción.

NÍVEIS DE APTIDÃO FÍSICA DE SOLDADOS INCORPORADOS NO 33º BATALHÃO DE INFANTARIA MOTORIZADO APÓS A REALIZAÇÃO DE UM PROGRAMA DE TREINAMENTO

RESUMO

Todos os militares, devido sua profissão, devem estar em condições de resistir ao stress, durar na ação, persistir em circunstâncias difíceis e permanecer no combate. Uma boa capacidade cognitiva e afetiva, ligado a uma excelente aptidão física são fatores preponderantes para que os mesmos tenham êxito em suas ações. O objetivo desta pesquisa foi avaliar os níveis de aptidão física por meio de um programa de treinamento pré e pós avaliação de soldados que incorporaram no ano de 2006 e que integraram o 33º Batalhão de Infantaria Motorizado, no município de Cascavel Paraná. Estudo do tipo semi-experimental realizado com 81 soldados, onde avaliou-se o peso e a estatura, sendo obtido por meio das duas avaliações o Índice de Massa Corporal (IMC) correlacionado com os resultados do Teste de Aptidão Física (TAF) que é regulamentado pelo Estado-Maior do Exército, sendo essas variáveis a corrida de 12 minutos, flexão de braços, abdominais e flexão na barra. Para a análise dos dados pré e pós avaliação foi utilizado o teste qui-quadrado com 5% de significância. Os resultados obtidos apontaram, em todos os testes realizados, que os recrutas apresentaram melhoras estatisticamente significantes. No que se refere a corrida de 12 minutos pré e pós avaliação, 48% dos recrutas melhoraram seus níveis de aptidão física, 44% permaneceram com os mesmos índices e 7% pioraram o seu rendimento. Na variável de flexão de barra, 65% dos recrutas melhoraram quando na realização do último TAF em relação ao primeiro, 30% permaneceram com os mesmo índices e apenas 5% diminuíram seus resultados. Portanto, concluiu-se que o programa de treinamento aplicado nos recrutas incorporados no 33º Batalhão de Infantaria Motorizado apresentou melhoras em relação a aptidão física dos mesmos durante a pré e pós avaliação.

Palavras Chave: Exército. Recrutas. Aptidão física. Treinamento.