



CHARACTERIZATION OF CHRONIC PAIN ON STATE POLICEMEN IN TRAINING AND SELF-REGULATION OF BEHAVIOR

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ABSTRACT

The present study aims to analyze the occurrence and characteristics of chronic pain on State Policemen in training, evaluating possible preventive and/or corrective effects of self-regulated attitudes. It uses quantitative techniques of exploratory and descriptive nature. As instrument for collection of data, it applied a pain inventory with participants from the Centro de Formação de Praças (CFAP) in Belém, Pará. The sample consisted of 32 privates in training. It verifies that almost all the policemen indicated the construction and maintenance of an exercise routine, but it is necessary to investigate more closely the related factors to evaluate the level of self-regulation of these individuals and its effects on the health of the policemen.

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INTRODUCTION

In Brazil, the State Police plays an important role regarding to the ostensive patrolling and maintenance of public order. It is therefore fundamental that these agents present a good physical conditioning, or even undergo rehabilitation treatment appropriate to their clinical condition (Teixeira and Pereira, 2010). It is common for candidates to State Policemen to carry out test batteries as a selection stage, which serves for the knowledge and control of applicants. This test is called Physical Fitness Test (PFT) (Araújo, Sanches, Turi and Monteiro, 2017). On PFT, the individual must be prepared for physical activities that can differentiate them from the general population, indicating their physical condition and functioning as eliminatory and qualifying stages for entering the police career or to be promoted. It is noteworthy that State Policemen are only submitted to PFT after prior approval in health examinations (Gonçalves, 2006; Tavares Neto, Faleiro, Moreira, Jambreiro and Schulz, 2014).

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However, it is understood that the continuity of the preparation and control of the physical fitness of these agents is fundamental when in service, including a process of rehabilitation of injuries caused by work accidents. There is a gap regarding compulsory physical activity programs, because of the heavy workload (Favacho and Rosa, 2012). Thus, it is considered that the development of self-regulatory skills is basal in this context, since they can contribute for a better performance of these Policemen, as well as to assist on the prevention and rehabilitation of injuries. Facing the technological advances and new ways of working, the society lifestyle has changed. This new model of life can contribute to sedentarism, as well as several other factors that can increase the rates of illness and mortality, such as excessive use of alcohol, smoking, hypercaloric diets, among others, bringing maltreatment to the body and predisposing it to diseases - including fatal ones (Ferreira, Bonfim and Augusto, 2011). Inevitably, an unbalanced rhythm and poor quality of life facilitate the appearance of health problems, increasing the physiological predisposition for certain injuries, such as musculoskeletal injuries, affecting muscles, joints, tendons, ligaments, nerves and bones, and diseases that affect the circulatory system, limiting the movements and ergonomics of

the individual, decreasing one's physical capacity (Almeida, 2012; Lesões, 2013). In Brazil, in 2006, 48.2% of social security benefits were due to occupational diseases related to this type of injury (Souza and Santana, 2011), representing a relevant problem for public health. And, depending on the type of injury suffered, the professional can stay away for a longer period of time, which imputes responsibilities to the public service and damages to the individual's private life (Brasil, 2001). Applying this context to public safety, it is possible to verify situations of vulnerability and physical and emotional exhaustion to which the Policemen are exposed. There are a number of risk factors for their health, such as increased violence and crime, unfavorable working conditions, exhausting workloads, stress and others, and it is fundamental for this professional to self-monitor themselves, so they are able to do what this job requires (Nunes, 2011). The State Police work includes activities that directly employ the musculoskeletal system, such as running, jumping, weight bearing (especially of shotgun vests), marches, repetitive movements, among others, which, by themselves, require a lot of effort, and may lead to the development of injuries, if the body's natural rhythm is disturbed (Silva, Alves and Goés, 2012). This is accentuated in the lower members region, where the largest muscle groups used in police activities are found, being more susceptible to the development of injuries (Silva *et al.*, 2012).

Another affected region is the spine. A study with State Policemen in Bahia revealed that the prevalence of low back pain, which causes functional limitation, was 2.6%, due to the greater requirement of physical and functional abilities, making them more exposed to injuries. In general, the difficulty in maintaining the stance becomes frequent, stressing the vertebral discs. In this case, this relation represented a higher number of withdrawals to administrative functions and lost work days, thus causing a significant decrease in the number of ostensive police activities (Tavares Neto *et al.*, 2014). These pathologies, however, can affect and compromise other areas of the body when exposed to overload activities and to emotional and physical stresses, which highlights the importance of an adequate rehabilitation process. Therefore, the prevention of dysfunctions requires measures that involve physical activities, taking into account the contribution of biomechanics¹, stance at work, safe forms of cargo handling, repetitive movements, all constant in the work of State Policemen (Tavares Neto *et al.*, 2014).

State Policemen in training: Upon entering the police force, the approved candidate usually participates in a training program, held at the police academy. This moment of socialization of the future Policemen and reception of new members has as main objective to introduce them and to provide knowledge and technical skills. There is also practical learning, which brings the police officer in line with the place and reality of the job, according to the designated position (Poncioni, 2005). In this sense, the police academy tends to "mold" future Policemen, based on theoretical and practical content models, which will direct the knowledge of the agent, including their behavior in face of police workaday situations. The police academy is thus characterized by an intense routine of efforts, requiring physical and emotional preparation to

overcome them and to build a solid professional identity (Poncioni, 2005). The practical training requires above average force and resistance from these Policemen, willing to differentiate them from the general population and indicate the state of their condition, so that they can carry out a police action. Physical exercise overload is inevitable, especially in the period of training, which can lead to injury, as well as on the professionals in action, generating a decrease of occupational well-being and increase of the withdrawal rates for functions with less physical demand, abrupt drops in productivity and lost days of work (Gonçalves, 2006; Tavares Neto *et al.*, 2014).

Regarding to the performance of the individual, activities are proposed to improve physical conditioning and personal defense, such as races, jumps, abs, bodybuilding, elbow flexion and others. Such activities, if practiced in excess or improperly, expose to injuries. According to the degree, if not diagnosed and treated effectively, the injury causes the pain to increase and worsen. Therefore, it is necessary to practice constant physical activities, preceded by stretching and warm-up, so that a muscular strengthening work can be performed, respecting the limits of the body. In addition, it is indicated the practice of exercises appropriate to the biotype, that is, depending on each body type, according to individual physical fitness (Araújo *et al.*, 2017). In this context, the use of the Behavior Self-Regulation construct as an auxiliary and motivating process in the prevention and rehabilitation of this public, and consequently, in the control of chronic pain, is suggested to encourage them to improve and maintain their capacities by modifying their behavior, regulating their attitudes and goals. It is understood that pain is a sign that something is wrong with the body, and if it persists for more than twelve weeks, it is characterized as chronic pain. In the case of Policemen, chronic pain may be related to injuries, which can lead to the withdrawal of the agent, resulting from a state of illness and a debilitating condition. Self-regulation has been studied in recent decades by several researchers and in various fields of activity, such as education, health, sports and, more recently, entertainment-education (Azzi, 2012), being considered a fundamental construct to aid in the development of the human being. Professional success is linked to the behavior of the individual, this being one of the main objects of study of the Cognitive Social Theory, of Albert Bandura (1986).

Starting from the idea that internal and external factors contribute to changes in behavior, through the exercise of self-direction, the individual exerts some control over their thoughts, feelings and actions. Thus, interactions of triadic reciprocity² can be regulated, especially external and self-generated influences (Bandura, 1986). According to the sociocognitive perspective, self-regulation is a conscious and voluntary process, in which the individual develops the management of their own behavior, feelings and thoughts, through a cyclical model aimed at reaching personal goals and general standards of conduct (Bandura, 1991). Therefore, it is fundamental that the individual adopts self-regulated standards, aimed at achieving their goals. In this case, it is imperative that the State Policemen adopt a self-regulated posture that directs the construction of healthy habits,

¹ "Biomechanics is a science that investigates movement under mechanical aspects, their causes and effects on living organisms" (Radaelli, 2011, translated by the authors).

² The individual, through the triadic reciprocity (internal, environmental and behavioral factors), is able to influence, even if partially, his environment, as well as to be influenced by it (Bandura, 1986).

involving the correct practice of physical activities, both for prevention and for the functional rehabilitation process, when necessary. In this context, the following research problems are constituted: how does pain manifest on State Policemen in training?, what is the relationship between pain and self-regulated attitudes towards the development of adequate physical conditioning for Policemen? It was defined as general objective of this study to analyze the occurrence and characteristics of chronic pain in State Police Privates in training, evaluating possible preventive and/or corrective effects of self-regulated attitudes. It is worth mentioning that this research recognizes the need for greater commitment by the public authorities and responsible institutions regarding to investments in the maintenance of the State Policemen's health, and that strategies must be developed in order to prevent and rehabilitate these agents in the shortest time possible. However, this study intends to investigate the psychological and cognitive – therefore, internal – mechanisms that can aid in the processes of prevention and rehabilitation of the participants. For this reason, the self-regulation construct of behavior is used.

METHODOLOGY

Nature of the research: The present study is based on an empirical research, applied with State Policemen in training, in the Metropolitan Region of Belém, Pará. The methodological proposal is focused on exploring quantitative techniques, adopting an exploratory and descriptive approach and seeking to size the object of study, as well as achieving the defined objectives. As for the technical procedures, they are categorized as data collection (Gil, 2008). The study is divided in 3 stages, namely: 1) characterization of the participants; 2) characterization of pain; and 3) survey of self-regulatory attitudes.

Context and participants: Within the scope of the State Police, according to the constitutional text, it is reserved the competence of the ostensive police and the preservation of public order, ensuring that policing is only one of the police activities (Pará, 2014). In the Constitution of the Pará State, regarding to the defense of society, the State Police of Pará is defined as:

Art. 198. The State Police is a permanent institution, auxiliary force and reserve of the Army, organized on the basis of military hierarchy and discipline, subordinating itself to the State Governor and competing to it, amongst other attributions provided by law:

- I- ostensive uniformed policing;
- II - the preservation of public order;
- III - the internal security of the State;
- IV- collaboration in the supervision of forests, rivers, estuaries and everything related to the preservation of the environment;
- V- the protection of historical, artistic, tourist and cultural heritage (Pará, 2011, translated by the authors).

The research universe encompasses State Policemen in training, with the Centro de Formação de Praças (CFAP), in Belém, Pará, as its locus. The sample, composed of 32 individuals, was selected by convenience, and four inclusion criteria were applied: 1) to be a State Policemen; 2) to be in the training period at the police academy – a time in which there is preparation for them to be able to enter the service, knowing

and acting in the police demands; 3) to be available to participate of the research; and, finally, 4) to work in Belém, Pará.

Data collection: The data collection locus was chosen because it is considered a reference center in the training of Privates, being defined according to the authorization and indications made available by the State Police General Command, considering the city of Belém. An instrument was developed to characterize participants and their pain, as well as to identify self-regulating behaviors resulting from personal patterns attributed to the profession, with closed questions such as: function, performance, age, sex, weight, height, etc. Other questions were constructed to elicit information about participants' perceptions of possible risk factors associated with the function (eg, "Have you ever been injured on duty?"); pain levels (eg, "Indicate the intensity of your pain in the last two weeks"), answered using a pain scale; prevention (eg, "Do you exercise?"), withdrawals, and practice of physical activity. Finally, some questions sought to verify data related to self-control and self-monitoring on the constitution of routines for the prevention and/or treatment of injuries and pain (eg, "How often ...?").

On the questions related to the types of injuries and pain levels, the Body Map was used to identify the site of the pain or lesion itself, based on the Visual Analogue Scale, adapted from Collins, Moore and Mcquay (1997), considering: 0 - No pain; from 1 to 2 – Mild Pain; from 3 to 7 - Moderate Pain; and, from 8 to 10 - Intense Pain. Finally, physical exercise practices were identified for the verification of self-regulatory behaviors related to physical conditioning, based on the guidelines of Albert Bandura's (1986) Cognitive Social Theory. The procedures began with the dispatch of letters requesting authorization to conduct the research at CFAP Belém. After the liberation, the Free Consent Form was presented to the Policemen in training, being informed in greater detail about their participation on the research, in which they could agree or not to participate, besides guaranteeing their anonymity and the disclosure only of the collected data. The adopted procedures obeyed the requirements of specific Resolution³ of Brazil's Conselho Nacional de Saúde, which determines standards for research involving human beings.

Data analysis: The data collected in this investigation were submitted to descriptive statistics, with central tendency measures that provide typical scores representative of the set and percentage calculations. In this case, the average and the separatrix - percentage measures were chosen. "A measure of central tendency of a set of data gives us an indication of the typical score in that dataset" (Dancey and Reidy, 2011, p. 41). To do so, the software Statistical Package for the Social Sciences (SPSS), version 2.4, was used. Some results were presented through statistical tables and graphical representation.

RESULTS AND DISCUSSION

Characterization of State Policemen in training: From the collection carried at CFAP, information was obtained regarding the characterization of pain on the State Policemen

³ Resolution 196/1996, updated by the Resolution 466/2012. Available online at <http://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf>.

in training. Following an inventory containing data such as age, sex, weight, height and level of education, graphs and tables were constructed in order to demonstrate the respective results, as well as a measure of central tendency - the average - to identify values which represent the totality of the collected data set (Dancey and Reidy, 2006). The sample totalized 32 participants, of whom 100% are male. It should be noted that the absence of women in this sample is due to the fact that the female agents were on an external mission during the period of the research. With regard to age, the predominant age group was 27-32 years (54.8%, 18 participants), followed by the age group 20-26 years (45.2%, 14 participants). Regarding to the level of education, 84.5% have only a high school diploma, while 15.6% have higher education. The average age of the Policemen was 26.7 years (27 years), with a minimum age of 20 years and a maximum of 32 years. The average weight of the subjects was 77.48 kg, ranging from 60 kg to 107 kg; and the height, between 1.66 m and 1.82 m, with an average of 1.7432 m.

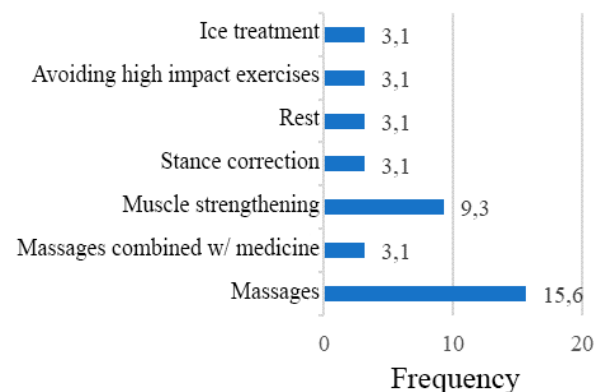
Characterization of pain: After identifying the participants' profile, we sought to verify the presence, frequency and characteristics of pain. In Table 1 are shown questions about the perception of the participants regarding the pain, that would allow responses between "YES" and "NO". It was noted that the majority (78.1%) reported to feel pain in the previous 12 weeks, but only 37.5% reported to take action to treat or prevent pain. The data also revealed that 15.6% of those involved indicated that they were discharged from police service due to injuries. The majority of the participants did not relate the pain to the physical condition (62.5%), overlapping the 37.5% that pointed this relationship.

Table 1. Questions from the inventory for characterization of pain, with YES or NO alternatives

Question	YES (%)	NO (%)
Have you felt pain on the last 12 weeks?	78,1	21,9
Have you done something to treat or prevent pain?	37,5	62,5
Have you been withdrawn because of injuries?	15,6	84,4
Does the pain have any relation with your physical conditioning?	37,5	62,5

The data summarized above point to some important issues: (1) pain is frequent in this sample, which can be explained by the constant physical effort during the training phase of the Police, in which the individual is constantly exposed to activities that can, if practiced incorrectly or exhaustively, generate musculoskeletal injuries; (2) despite the frequent presence of pain, few take adequate care to treat it or even to prevent injuries, being understood that, in the medium term, these factors can cause even more severe injuries, especially when these Policemen take over in the field of service; (3) even in training, 5 of the participants (15,6%) have already withdrawn because of injuries; (4) the minority (37,5%) attributed the pain and injuries to the physical conditioning, which is the main cause for it, because if the body is unprepared to receive a certain load of activity, the muscle tends to work incorrectly, causing the appearance of pain and, in consequence, injuries. In the inventory of pain that was applied with the participants, they were asked to indicate the pain intensity at the time of the data collection. The results indicate that the majority were pain free (56,3%), followed by those who reported having mild pain (31,3%), and, finally, 12,5% presented moderate pain, characterized by a decrease in the pain scale.

When measuring how much the pain interferes in the activities of the Policemen in training, 59% responded not to perceive interferences; 31.3% indicated that there is little interference; followed by 1 individual who indicated reasonable interference and 1 agent that said that it interferes greatly. This means that, in most cases (90.3%), whether the pain does not disturb or it causes small interferences. In order to deepen the investigation, information about the participants' possible attitudes to treat or prevent pain was obtained, and it was possible to identify some physical activities and even the use of medication, as shown in Graph 1.



Graph 1: Percentage of attitudes to prevent or treat pain related to the function of military police of the Center for the Formation of Squares (CFAP), in Belém do Pará, in the year 2018

Regarding this issue, the majority (15.6%) reported massaging the pain location, sometimes using oils; others indicated the practice of stretching and muscle strengthening with exercises (9.3%); stance correction (3.1%); rest (3.1%); avoiding overload in high impact exercises (3.1%) and ice treatment (3.1%). It is noteworthy that 59.4% of the participants decided not to answer this question. Regarding the types of injuries and pain acquired by the participants during the training period, it was noted that 15.6% did not present any type of injury, and among those who presented, 3 participants indicated to feel knee pain⁴ (9.4%), 1 participant (3.1%) presented pain in the legs and shoulders, 1 participant (3.1%) reported having knee injuries, and only 1 specified the injured site, in this case, the anterior cruciate ligament⁵ (3.1%). This suggests that the other respondents who reported pain felt it, but had not yet diagnosed the injury itself.

It was also requested that they would indicate, in a figure representative of the human body, the areas where they felt pain. With the data collected, using the separatrix - percentage measure, a map was created to locate the most affected regions in the sample (Figure 1). The pain map, constructed from the participants' indications, presents the percentage of occurrence of pain per region of the body. A blue color scale was used to indicate which parts of the body were most cited when referring to pain: the lighter the blue tone, the less indicated was the location; the darker, the more mentioned it was. It was observed that the most indicated regions of the body regarding pain perception were: (1) right shoulder (21.9%); (2) lumbar spine and left knee (15.5% each); (3) cervical spine and right

⁴ Pain can be considered a symptom of injury (Lesão, s. d.).

⁵ Anterior Cruciate Ligament is one of the main elements of restraint of the knee, formed by connective tissue. It has several functions, amongst them the impediment of the anterior movement of the tibia in relation to the femur (Lesão, s. d.).

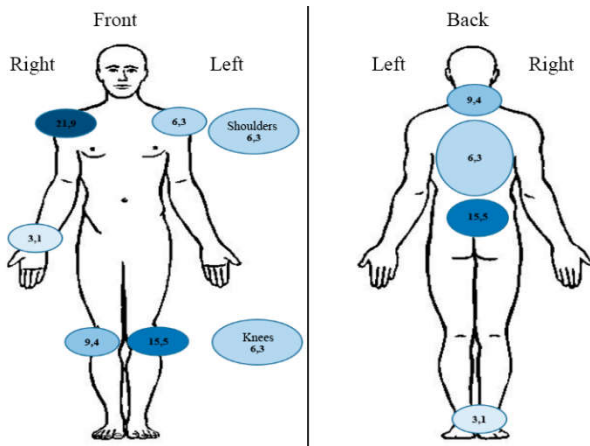


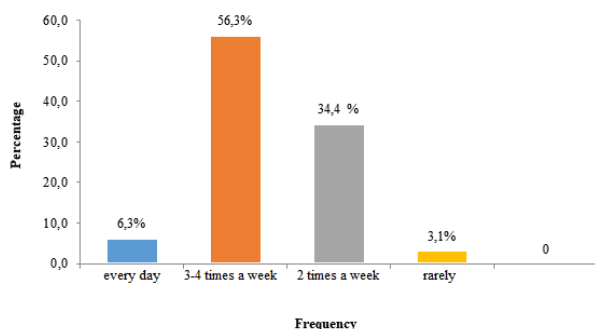
Figure 1. Map of the location (based on percentage of occurrence) of pain in Military Police Officers of the Squatting Center (CFAP), in Belém do Pará, in the year 2018

knee (9.4%); (4) dorsal spine, left shoulder, both knees together and both shoulders together (6.3%); (5) right wrists and heels (3.1%).

Self-regulatory attitudes towards the development of physical fitness appropriate to the role of State Policemen:

In this section, we try to identify possible attitudes that can be associated to characteristics of self-regulated behavior, at some level. Self-regulated behavior, in this context, can help in the constant practice of physical activities, and if promoted, leads to change of habits in individuals, thus contributing to prevention and/or rehabilitation. Self-regulation of an individual occurs according to self-control and self-monitoring, among other cognitive processes that facilitate the achievement of goals.

Thus, Graph 2 was constructed to present the level of relationship of individuals with physical activities, from the creation of an exercise routine that the individual seeks to maintain, and therefore, a degree of self-control and self-monitoring is necessary, in order to develop a physical conditioning that correctly manages the police requirements. The results indicate that only 2 participants (6.3%) reported practicing exercises every day; the majority (56.3%, 18 participants) answered that they practice exercises 3 to 4 times a week; followed by 11 (34.4%) who practice 2 days a week. Only 1 participant stated difficulty to perform physical activities. In general, it was noted that almost all police agents (97%) have a well-established and frequent exercise routine. This can be explained, in part, by the demands of the training period.



Graph 2: Percentage of the frequency of physical exercises practiced by the military police at the Center for Squatting (CFAP) in Belém do Pará in the year 2018

Complementarily, the participants were questioned about the motivation to maintain an exercise routine. The majority (43.8%) of the participants indicated that they do so by their own initiative, in addition to their superiors' demands, due to their functions in the police academy; 31.3% indicated their own initiative in the practice of exercises; while 25% indicated only the requirement of superiors as motivations, considering the demands of the police function. The data also indicate that, from the 3 police agents who said they had been injured on duty, all of them practiced exercises 3 to 4 times a week, and 2 of them said they did this only because of their superiors' demands, and not by their own initiative. The results presented here indicate that, by self-regulating the behavior to acquire a healthier life routine, aiming at a physical preparation for the role of State Police, it is possible that injuries and pain resulting from this reality are avoided or worked. In the sample investigated, almost all the police agents indicated the construction and maintenance of an exercise routine, but it is necessary to investigate more related factors to evaluate the level of self-regulation of these individuals and their effect on the health of the Policemen.

Based on the idea that internal and external factors contribute to change in behavior through the exert of self-direction, the individual have some control over their thoughts, feelings and actions, propitiating the regulation of triadic reciprocity interactions, mainly, external and self-generated influences (Bandura, 1986). According to the sociocognitive perspective, self-regulation is a multifaceted phenomenon, which operates through subsidiary cognitive processes, including self-monitoring, establishment of standards, evaluative judgment, self-assessment, and affective self-repair (Bandura, 1991). Such subsidiary processes are classified into a set of psychological sub functions, which cover self-observation, judgment and self-reactions. By means of these subfunctions, the self-regulation of behavior operates, therefore, when fostered and developed, they promote direction and change. It is noteworthy that these sub functions were divided only for explanatory purposes; according to theory, they occur cyclically, and one process feeds the other, so that they are always interconnected. These sub functions, if fitted to the physical activities, facilitate the work of prevention and rehabilitation of injuries.

Through self-observation, the individual perceives the need for change, making a self-analysis of his actions and behaviors. Self-observation has two important functions of the self-regulation process: it provides information necessary for the establishment of realistic performance samples and evaluation of the changes that occur with the behavior; and has the function of self-diagnosis, through which the individual analyzes their thoughts, emotional reactions and conditions to observe and direct recurrent patterns of behavior (Bandura, 1986, 1991). This enables the individual to design possible changes in their training in order to prevent and treat injuries according to the demand of their body and in a satisfactory manner. The judgment is the moment in which the direction of the change in the behavior is defined, anticipating the self-reaction, being the appearance of new underlying processes. Through personal standards, the individual uses as an example the behavior that he deems significant and that may contribute to influences considered positive for his own behavior. In addition to personal standards, judgments are part of: (1) performance benchmarks - the individual will refer to behavior through comparisons, collectively and individually, making it

possible to add to the judgment process more than one reference; (2) value of the task - the individual will consider the real value of the task, whether it is high value, neutral or worthless; (3) and the perception of the determinants of behavior - is the perception and judgment of the influence of the task in personal and external conditions (Bandura, 1986, 1991). At this point, the individual will determine a pattern of development, referenced through models of treatment or practice - for example, the search for a suitable professional.

According to Bandura (1986), the individual does not plan self-incentives and does not plan how to remain self-regulated, only monitors the beginning, middle and end of the course of action and, from the results, promotes punitive rewards or actions. It is foreseeable that if the task is successfully accomplished, there will be favorable consequences to the individual; otherwise, the consequences are unfavorable. This sub process, self-reaction, directly enables self-directed behavior change according to the outcome. Such a sub function, as well as self-observation, aids in the cyclical relationship of the three sub functions, providing subsidies for self-regulation to take place. In this case, as punitive action, it is understood that it may be the appearance of injuries, due to incorrect practice, suspension of activities by accountant and other annoyances that this clinical situation can cause. However, if the individual attends to the self-regulation steps, it is assumed that the use of this concept favors well-being and helps to regulate behavior regarding to the practice of physical activities, assisting in the preventive process of the appearance of injuries, and even in the treatment and rehabilitation of injuries.

Final considerations: Although the results of the research favor the proposal of self-regulation applied to the physical training of police officers in training, even if it is required by superiors, is of paramount importance that the police activity has a physical monitoring and preventive medicine, since the demands (and efforts to fulfill them) inherent to this activity increase with time in the corporation. Self-regulated behavior can be of great value in this new stage of their career, since, without the requirements of the training course, the police agent will need to maintain his or her physical exercise routine in the face of the growing demands of the profession. It is highlighted as limitations of the study the lack of data that prove the correlation of the concept of self-regulation with the physical performance of the individuals. Future studies may investigate whether individuals whose occupations require a certain degree of physical fitness can benefit through self-regulated behavior. Another limitation is the need for more detailed research into the training of the Policemen, such as the training and preparation phase in police academies, and how the self-regulation construct can contribute to this training moment.

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