# 10 - ANALYSIS OF KNOWLEDGE OF ANABOLIC STEROIDS BY PHYSICAL EDUCATION TEACHERS WORKING IN ACADEMIES OF BELÉM - PA.

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## INTRODUCTION

Initially the use of anabolic androgenic steroids (AAS) in sports was more prevalent among male athletes, in order to improve performance, such as increased muscle mass and strength, aggression and facilitating the recovery between training sessions (SILVA DANIELSKI; CZEPIELEWSKI, 2002; HARTGENS; KUIPERS, 2004, TAVARES et al., 2008).

However, the past two decades, research has shown that the use of these substances became more frequent among non-athletes who do resistance training with particular esthetic goal, such as increased muscle mass and decreased fat mass (YESALIS et al. 1993; NILSSON et al., 2001, ELLIOT et al. 2007; ABRAHIN et al., 2011). Its use has increased alarmingly over the years, so that recent research in the United States showed that the incidence of AAS use among adolescents was higher when compared to other drugs such as cocaine and heroin (WOOD, 2008).

Data from surveys conducted in our country suggest that AAS are generally traded within the academy itself, and very often the teacher and / or friend tend to guide the use of these drugs (ARAÚJO, ANDREOLI; SILVA, 2002; SILVA; MOREAU, 2003; ARAÚJO, 2003; MAIOR et al., 2009).

Another relevant fact is that some studies have indicated high prevalence of AAS among physical education teachers who work in academies, when compared to other groups such as academics and other professionals in the health area, teens, men and women (PALMA; ASSIS, 2005; CHIAPETTA; SERBENA, 2007; PALMA, ABREU; CUNHA, 2007; ABRAHIN et al., 2011).

In this context, considering that the physical education teachers are individuals makers, in order that the level of knowledge about the likely benefits and adverse events can influence the decision to use these substances and encourage their own students to use these drugs, this study aimed to analyze the knowledge of AAS by physical education teachers working in academies in Belém-PA.

## METHODOLOGY

In a universe of 43 academies registered with the Regional Council of Physical Education 8 th Region (CREF8), 10 of them, or 23.2% of the academies of Belém do Pará participated in the survey (FEDERAL COUNCIL OF PHYSICAL EDUCATION, 2010).

The sample consisted of 90 teachers. The study included only physical education teachers working in academies in Belém-PA, with no restriction on sex.

The term of informed consent (IC) was signed by the owners of clubs and individuals in the sample. The study was approved by the Ethics Committee of the University of Pará / Course of Physical Education (CAAE 0060.0.412.000-10) in accordance with standards of Resolution 196/96 of the National Research involving human subjects.

The technique used for the selection of participants was to random sampling, since the choice of the academy depended only CREF8 in your registration and authorization for the establishment responsible for the application of research.

For data collection we used a closed questionnaire, anonymous and voluntary character. The instrument was designed specifically for this study, followed a few references to its construction (ARAÚJO, 2003; PALMA; ASSIS, 2005; SANTOS, ROCHA; SILVA, 2011). Questionnaires were available in unidentified envelopes, after the acceptance of respondents participate in the study. After filling out the questionnaires were re-deposited in envelopes and delivered by the volunteers themselves to researchers.

A pilot survey was used to analyze the reproducibility of the questionnaire into four academies of Belém It was attended by 23 teachers who were not included in the study sample. This time, the results ensured the reproducibility of the questionnaire, given that respondents understood and responded to the instrument clearly

## STATISTICAL ANALYSIS

The degree of knowledge of respondents about AAS was compared according to level of education, through non-parametric statistics, X2 test (chi-square test), considering the confidence interval $p < 0.05$. Statistical calculations, tables and graphs were performed in Microsoft Excel 2007 and SPSS

## RESULTS

Most specialists surveyed were 62.2% and 34.4% graduates (Table 1).

Table 1. Distribution of respondents by level of graduation.

| Graduation Level | % | N |
|---|---|---|
| Graduates | 34,4% | 31 |
| Specialists | 62,2% | 56 |
| Masters | 3,3% | 3 |
| Total | 100% | 90 |

Nota. n= frequency; %= percentage.

The results presented in Table 2 refer to substances classified as AAS according to the educational level of respondents. The three most frequently cited were: Durateston, Deca-Durabolin and Winstrol/Oxandrolone. However, we highlight some substances classified mistakenly as AAS, GH, Clenbuterol, ADE, Ephedrine and Synthol.

Table 2. Substances classified as AAS.

| Substances | Graduation Level | | | Total (%)* | Total (n)* |
|---|---|---|---|---|---|
| | Graduates | Specialists | Masters | | |
| Deca-Durabolin | 86,7% | 90,6% | 33,3% | 83,3% | 75 |
| Hemogenin | 66,7% | 69,8% | 33,3% | 64,4% | 58 |
| Winstrol | 83,3% | 77,4% | 33,3% | 74,4% | 67 |
| Synthol | 6,7% | 15,1% | 33,3% | 12,2% | 11 |
| Efedrina | 13,3% | 7,5% | 0% | 8,8% | 8 |
| Oxondrolona | 63,3% | 88,7% | 33,3% | 74,4% | 67 |
| Durateston | 96,7% | 90,6% | 100% | 88,8% | 80 |
| GH | 33,3% | 43,4% | 33,3% | 37,7% | 34 |
| ADE | 16,7% | 13,2% | 0% | 13,3% | 12 |
| Primobolan | 36,7% | 52,8% | 0% | 43,3 | 39 |
| Estanozolol | 60,0% | 60,4% | 0% | 55,5% | 50 |
| Clenbuterol | 10,0% | 24,5% | 0% | 17,7% | 16 |

Nota. n= frequency; %= percentage; GH = Grow Hormone; ADE = Vitamin A, D and E in oil vehicle; * = sum of individuals surveyed.

Table 3. Possible side effects caused by the use of AAS.

| Side Effects | Graduation Level | | | Total (%)* | Total (n)* |
|---|---|---|---|---|---|
| | Graduates | Specialists | Masters | | |
| Hair growth | 87,1% | 94,5% | 100% | 91,1% | 82 |
| Deepening of the voice | 87,1% | 90,9% | 100% | 88,8% | 80 |
| Gynecomastia | 64,5% | 89,1% | 66,7% | 78,8% | 71 |
| Acne | 90,3% | 90,9% | 66,7% | 88,8% | 80 |
| Decrease of the penis | 25,8% | 10,9% | 0% | 15,5% | 14 |
| Impotence sexual | 87,1% | 80,0% | 33,3% | 80% | 72 |
| Aggressiveness | 83,9% | 89,1% | 33,3% | 84,4% | 76 |
| Flavouring | 19,4% | 47,3% | 33,3% | 36,6% | 33 |
| Increased risk of tendon tears | 22,6% | 34,5% | 66,7% | 31,1% | 28 |
| Hypertrophy of the clitoris | 80,6% | 78,2% | 33,3% | 76,6% | 69 |
| Amenorrhea | 32,3% | 56,4% | 33,3% | 46,6% | 42 |
| Cancer | 51,6% | 70,9% | 66,7% | 63,3% | 57 |
| Hair loss | 38,7% | 58,2% | 33,3% | 50% | 45 |
| Loss of libido | 48,4% | 56,4% | 0% | 51,1% | 46 |
| Increased of libido | 22,6% | 43,6% | 33,3% | 35,5% | 32 |
| Infertility | 51,6% | 61,8% | 33,3% | 56,6% | 51 |
| Impaired spermatogenesis | 38,7% | 49,1% | 0% | 43,3% | 39 |
| Increased risk of muscle injury | 12,9% | 23,6% | 0% | 18,8% | 17 |
| Testicular atrophy | 48,4% | 52,7% | 33,3% | 50% | 45 |

Nota. n= frequency; %= percentage; * = sum of individuals surveyed.

According to Figure 1 it is noted that the majority of graduates and specialists believe that there are physiological differences in the use of oral and injectable AAS.

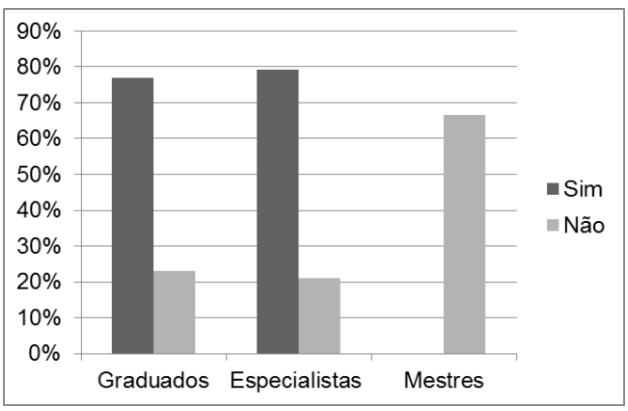



Figure 1. Physiological difference between oral and injectable AAS. * p <0.03 significant between the groups.

When asked about the use of AAS associated with other drugs, in order to prevent side effects there was no statistical difference between groups (Figure 2).

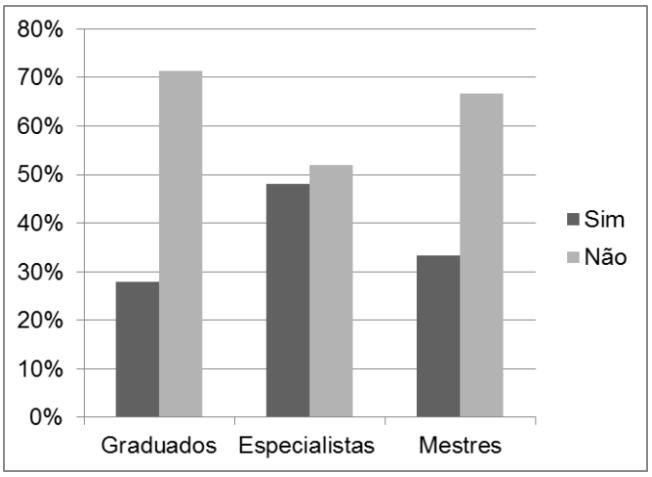



Figure 2. Use of AAS with other drugs to prevent side effects. p <0.22 not significant between the groups.

**DISCUSSION**

Analyzing the knowledge of substances classified as AAS, note that Sustanon, Deca-Durabolin, Oxandrolone / Winstrol were the most cited. When comparing these results with the literature, we found that these substances have also been mentioned by lay individuals as anabolic (ARAÚJO, ANDREOLI; SILVA, 2002; ARAÚJO, 2003; SILVA; MOREAU, 2003).

We also highlight some substances mistakenly marked by the number of subjects studied, as anabolic GH (37.7%), Clenbuterol (17.7%) and ADE (13.3%). However, such substances are respectively: growth hormone, commonly used bronchodilator for the treatment of asthma, and veterinary medicine / oil found (SILVA; MOREAU, 2003; FIGUEIREDO et al., 2011).

Santos, Rocha; Silva (2011) warned that the ADE was among the drugs most used by bodybuilders as AAS, being the fourth most commonly reported by drug users. Another survey found that users and former users of AAS also appear to be mixed when using drugs and other substances such as AAS, being among the most cited Clenbuterol and Ephedrine (SILVA; MOREAU, 2003). The data presented in our study indicate that knowledge of substances classified as AAS for physical education teachers who work in academia, does not seem to distinguish individuals lay users of these drugs (SILVA; MOREAU, 2003; SANTOS, ROCHA; SILVA, 2011).

As for side effects from AAS, it was found that aromatization, decreased spermatogenesis, increased risk of tendon tears and muscle damage were less marked. Al-Falasi et al. (2008) when analyzing the awareness and prevalence of AAS use among gym-goers in the UAE, noted that the side effects most frequently cited were: gynecomastia (41.0%), stunting (29.0%) and cancer (20.0%).

The data above does not emphasize studies with physical education teachers who work in academies and scientific knowledge of AAS. However, it is noteworthy that many studies conducted in our country show that physical educators themselves often guide the use of these drugs (ARAÚJO, ANDREOLI; SILVA, 2002; SILVA; MOREAU, 2003; ARAÚJO,2003; MAIOR et al., 2009). Although our results demonstrate that they seem to have enough scientific knowledge about the side effects caused by these drugs.

Most respondents believe that there is physiological difference in the use of oral and injectable AAS. According to Santos (2007) injectable anabolic steroids are physiologically less aggressive as they are released more slowly into the bloodstream, ie, have long survival. In addition, perform only one pass through the liver, while the tablets are twice this body, causing a greater burden to the liver. In fact, the risk for liver problems seem to be mainly related to abuse of oral EAA (17α-alkylated) to be more toxic and resistant to hepatic metabolism.

Although no statistical difference between the groups on the use of other medications to prevent side effects of AAS, some researchers believe that other drugs can cause this effect. In fact, this assumption is common among some lay users, who also use drugs believing that they will not develop the side effects caused by AAS (SANTOS, 2007).

**FINAL**

The results presented in our study indicate that the AAS analysis of scientific knowledge in physical education teachers who work in academies of Bethlehem, does not seem to distinguish individuals lay users of these drugs. Especially when it refers to substances classified as AAS and its side effects. It is noteworthy that physical educators are health professionals and therefore responsible for prevention and health promotion should always be updated on issues related to their area of expertise to better guide their students.

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**ANALYSIS OF KNOWLEDGE OF ANABOLIC STEROIDS BY PHYSICAL EDUCATION TEACHERS WORKING IN ACADEMIES OF BELÉM - PA.**

**SUMMARY**

The use of anabolic androgenic steroids (AAS) has been disseminated in the gyms, and a lot of times these drugs are marketed within the academy. Thus, the physical education teachers who work in academies are prone to questions about these drugs, and may interfere with its use. The objective of this study was to analyze the knowledge of AAS by physical education teachers working in academies in Belém-PA. We used to collect data and an anonymous closed questionnaire, applied to 90 teachers. The degree of knowledge of respondents about AAS was compared according to level of education, through non-parametric statistics, X2 test (chi-square test), considering the confidence interval p <0.05. The results on substances classified as AAS for physical education teachers who work in academies, was similar to that of lay individuals users of these drugs. In relation to the same side effects seem to have enough scientific knowledge, considering that flavor, decreased spermatogenesis, increased risk of tendon tears and muscle damage were rarely reported as side effects from AAS. It is concluded that scientific knowledge of AAS analyzed by physical education teachers who work in academies of Belém, does not seem to distinguish individuals lay users of these drugs.

**KEYWORDS:** anabolic agents, physical education, teacher.

**ANALYSE DES CONNAISSANCES DES STEROÏDES ANABOLISANTS PAR LES ENSEIGNANTS D'EDUCATION PHYSIQUE DE TRAVAIL DANS LES ACADEMIES DE BELÉM - PA.**

**SOMMAIRE**

L'utilisation de stéroïdes anabolisants androgènes (SAA) a été diffusée dans les gymnases, et un grand nombre de fois ces médicaments sont commercialisés au sein de l'académie. Ainsi, les professeurs d'éducation physique qui travaillent dans les académies sont sujettes à des questions au sujet de ces médicaments, et peut interférer avec son utilisation. L'objectif de cette étude était d'analyser la connaissance de l'AAS par les enseignants d'éducation physique qui travaillent dans les académies à Belém-PA. Nous avons utilisé pour collecter des données et un questionnaire anonyme fermée, appliquée à 90 répondants. Le degré de connaissance des répondants sur l'AAS a été comparé selon le niveau d'éducation, par le biais statistiques non paramétriques, X2 test (test du chi carré), compte tenu de l'intervalle de confiance p <0,05. Les résultats sur les substances classées comme AAS pour les enseignants d'éducation physique qui travaillent dans les académies, a été similaire à celle des utilisateurs des individus jeter de ces médicaments. En ce qui concerne les mêmes effets secondaires semblent avoir suffisamment de connaissances scientifiques, considérant que la saveur, diminution de la spermatogenèse, un risque accru de larmes tendon et les dommages musculaires ont rarement été rapportés en tant qu'effets secondaires de l'AAS. Il est conclu que les connaissances scientifiques de l'AAS analysés par des professeurs d'éducation physique qui travaillent dans les académies de Bethléem, ne semble pas distinguer les individus les utilisateurs profanes de ces médicaments.

**MOTS-CLES:** anabolisants, d'education physique, professeur.

**ANÁLISIS DE LOS CONOCIMIENTOS DE LOS ESTEROIDES ANABÓLICOS POR PROFESORES DE EDUCACIÓN FÍSICA QUE TRABAJAN EN ACADEMIAS DE BELÉM - PA.**

**RESUMEN**

El uso de esteroides anabólicos androgénicos (EAA) se ha difundido en los gimnasios, y muchas veces estos medicamentos se comercializan dentro de la academia. Por lo tanto, los maestros de educación física que trabajan en las academias son propensos a las preguntas sobre estos fármacos, y pueden interferir con su uso. El objetivo de este estudio fue analizar el conocimiento de AAS por profesores de educación física que trabajan en academias en Belém-PA. Se utilizó para recopilar datos y un cuestionario anónimo cerrado, aplicado a 90 participantes. El grado de conocimiento de los encuestados acerca de AAS se comparó de acuerdo al nivel de la educación, a través de estadística no paramétrica, la prueba X2 (chi-cuadrado), teniendo en cuenta el intervalo de confianza p <0,05. Los resultados de las sustancias clasificadas como de autorización previa para profesores de educación física que trabajan en las academias, fue similar a la de los usuarios legos con los individuos de estos fármacos. En relación con los mismos efectos secundarios que parecen tener los suficientes conocimientos científicos, teniendo en cuenta que el sabor, disminución de la espermatogénesis, mayor riesgo de desgarros de los tendones y el daño muscular rara vez se informa de los efectos secundarios del AAS. Se concluye que el conocimiento científico de la AAS analizados por profesores de educación física que trabajan en las academias de Belén, no parece distinguir a los individuos laicos usuarios de estas drogas.

**PALABRAS CLAVE:** agentes anabolizantes, educación física, profesor.

**ANÁLISE SOBRE O CONHECIMENTO DE ESTEROIDES ANABOLIZANTES POR PROFESSORES DE EDUCAÇÃO FÍSICA QUE ATUAM EM ACADEMIAS DE BELÉM – PA.**

**RESUMO**

O uso esteroides anabólicos androgênicos (EAA) tem sido disseminado nas academias de ginástica, e muita das vezes tais drogas são comercializadas dentro da própria academia. Desta forma, os professores de educação física que atuam em academias estão propensos a questionamentos sobre estas drogas, assim como podem interferir em sua utilização. Objetivou-se neste estudo analisar o conhecimento de EAA por professores de educação física que atuam em academias de Belém-PA. Utilizamos para a coleta de dados um questionário fechado e anônimo, aplicado a 90 pesquisados. O grau de conhecimento dos pesquisados sobre EAA foi comparado de acordo com o grau de instrução, através de estatística não-paramétrica, prova de X2 (qui-quadrado), considerando o intervalo de confiança de p<0,05. Os resultados sobre substâncias classificadas como EAA por professores de educação física que atuam em academias, se mostrou semelhante ao de indivíduos leigos usuários destes fármacos. Em relação aos efeitos colaterais os mesmos parecem não ter conhecimento cientifico suficiente, haja vista que aromatização, diminuição da espermatogênese, risco aumentado do rompimento de tendão e lesão muscular foram pouco citados como efeitos colaterais causados pelos EAA. Conclui-se que o conhecimento científico de EAA analisado por professores de educação física que atuam em academias de Belém, parece não distinguir de indivíduos leigos usuários destes fármacos.

**PALAVRAS-CHAVES**: anabolizantes, educação física, professor.