



CHRISTIANO BERTOLDO URTADO

**PREVALÊNCIA E PERFIL DA UTILIZAÇÃO DE
ESTERÓIDES ANABOLIZANTES POR PRATICANTES DE
TREINAMENTO DE FORÇA COM IDADE ENTRE 14 E 24
ANOS NA CIDADE DE PIRACICABA,
SÃO PAULO, BRASIL**

***PREVALENCE AND PROFILE OF ANABOLIC STEROIDS
USERS BETWEEN 14 AND 24 YEARS REGULAR
RESISTANCE TRAINED SUBJECT IN PIRACICABA,
SÃO PAULO, BRAZIL***

**CAMPINAS
2014**



UNIVERSIDADE ESTADUAL DE CAMPINAS
FACULDADE DE CIÊNCIAS MÉDICAS

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TRAINED SUBJECT IN PIRACICABA,
SÃO PAULO, BRAZIL**

Tese apresentada à Faculdade de Ciências Médicas da Universidade Estadual de Campinas como parte dos requisitos exigidos para obtenção do título de Doutor em Ciências, Área concentração: Saúde da Criança e do Adolescente.

Doctor's degree thesis presented to the School Medical Sciences of the University of Campinas to obtaining the Doctor grade in Science, concentration area: Children and Adolescents Health.

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ESTE EXEMPLAR CORRESPONDE À VERSÃO FINAL DA TESE
DEFENDIDA PELO ALUNO CHRISTIANO BERTOLDO URTADO, E
ORIENTADO PELO PROF. DR. JOSÉ MARTINS FILHO.

Assinatura do Orientador

**CAMPINAS
2014**

Ficha catalográfica
Universidade Estadual de Campinas
Biblioteca da Faculdade de Ciências Médicas
Maristella Soares dos Santos - CRB 8/8402

Ur8p Urtado, Christiano Bertoldo, 1980-
Prevalência e perfil da utilização de esteróides
anabolizantes por praticantes de treinamento de força
com idade entre 14 e 24 anos na cidade de Piracicaba,
São Paulo, Brasil / Christiano Bertoldo Urtado. --
Campinas, SP : [s.n.], 2014.

Orientador : José Martins Filho.
Tese (Doutorado) - Universidade Estadual de
Campinas, Faculdade de Ciências Médicas.

1. Questionários. 2. Adolescente. 3. Treinamento de
resistência. 4. Anabolizantes. 5. Perfil de saúde. I.
Martins Filho, José, 1943-. II. Universidade Estadual de
Campinas. Faculdade de Ciências Médicas. III. Título.

Informações para Biblioteca Digital

Título em outro idioma: Prevalence and profile of use of anabolic steroids in subject's
regular resistance trained among 14 and 24 years in Piracicaba, São Paulo, Brazil

Palavras-chave em inglês:

Questionnaires

Adolescent

Resistance training

Anabolic agents

Health profile

Área de concentração: Saúde da Criança e do Adolescente

Titulação: Doutor em Ciências

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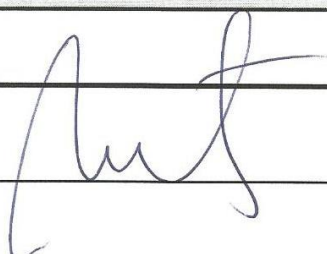
Data de defesa: 30-07-2014

Programa de Pós-Graduação: Saúde da Criança e do Adolescente

BANCA EXAMINADORA DA DEFESA DE DOUTORADO

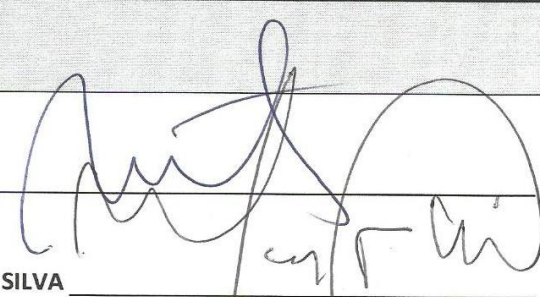
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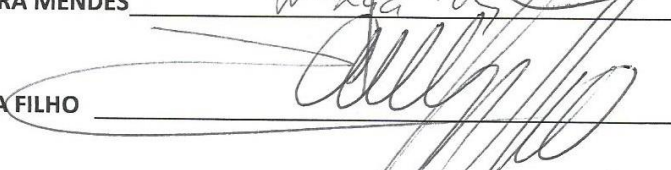


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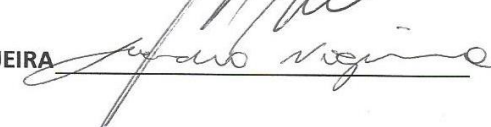
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Data: 30 de julho de 2014

RESUMO

Os esteróides anabólicos androgênicos (EAAs), são hormônios sintéticos derivados da testosterona e têm sido usados, por muitos atletas, de diferentes modalidades para melhorar a performance esportiva. Além disso, seu uso se estende também entre os adolescentes e jovens com objetivos estéticos. Faltam dados epidemiológicos relacionados ao uso desses hormônios por adolescentes e jovens frequentadores de academias de ginástica, praticantes de treinamento de força, principalmente no Brasil. Diante disso, o objetivo desse trabalho foi desenvolver, padronizar e validar um questionário de uso de esteróides anabolizantes em jovens praticantes de treinamento de força e aplicar o instrumento em população alvo específica. Após a elaboração do instrumento, dez especialistas divididos nas áreas de medicina, educação física, nutrição, fisioterapia e estatística, participaram da primeira etapa de validação, através do método de porcentagem de concordância. Após adequação ou retirada das questões que atingiram concordância inferior a 90%, foi realizada a segunda etapa de teste-reteste em 50 jovens com idade entre 14 à 24 anos. Posteriormente a validação, foram aplicados 560 questionários em jovens entre 14 à 24 anos praticantes de treinamento de força na cidade de Piracicaba, São Paulo, Brasil. Os dados foram inicialmente inseridos no Microsoft Excel for Mac 2011 e analisados através do software SPSS for Windows 20.0. Foi realizado o teste de correlação de Spearman (r_s) para avaliação da reprodutibilidade e para a segunda etapa da pesquisa foi usada estatística descritiva e teste do Quiquadrado. Na etapa de validação do instrumento, 30 questões tiveram índice de concordância maior ou igual a 90%, sendo 7 que apresentaram índice menor que 90% foram reformuladas ou retiradas. Os resultados mostram alto nível de reprodutibilidade em cada questão, sendo algumas delas $r_s = 1,00$ ($p = 0,0001$). O menor valor de reprodutibilidade encontrado foi de $r_s = 0,66$ ($p = 0,0001$). Após aplicação do teste do quiquadrado, a prevalência do uso de EAAs foi de 15% para o sexo masculino

e de 2,6% para o sexo feminino. A hipertrofia muscular apareceu como objetivo mais prevalente (22,8%), seguido de definição muscular (4,6%), emagrecimento (2,9%) e o menos prevalente a saúde (2,6%). Dentre os hormônios, o mais citado foi Durateston (43%), seguido por Deposteron e Winstrol (34%) e Decanoato de Nandrolona (26%). Já os suplementos alimentares mais citados foram BCAA com 17%, Whey Protein e Hipercalórico com 15%, seguidos por Albumina, Maltodextrina e creatina, todos com 13% de utilização. Nossos dados demonstram que o instrumento desenvolvido para a pesquisa foi válido e reprodutível e que há um número importante de jovens praticantes de treinamento de força na cidade de Piracicaba-SP usuários de hormônios e outras substâncias, sendo considerado um problema de saúde pública e que merece atenção e conduta especial dos profissionais envolvidos na saúde do adolescente.

Palavras-chave: Questionários; Adolescente; Treinamento de resistência; Anabolizantes; Perfil de saúde.

ABSTRACT

The androgenic anabolic steroids (AASs) are synthetic hormones derived from testosterone and they have been used by many athletes of diverse modalities to improve sports performance. Besides that, their use also extends to adolescents and young with esthetic goals. There is a lack of epidemiological data related to the use of those hormones by adolescents and young who attend gyms for gymnastics, who practice resistance training, especially in Brazil. In face of that, the goal of this work was to develop, standardize and validate a questionnaire about the use of anabolic steroids in young resistance trained subjects and apply the instrument in a specific target population. After developing the instrument, ten specialists divided into the areas of medicine, physical education, nutrition, physicaltherapy and statistics participated in the first phase of the validation, by means of the method of agreement percentage. After making adaptations or withdrawing the questions which reached an agreement of less than 80%, there was a second phase of testing-retesting carried out in 50 young, ages 14 to 24 years. Subsequent to the validation, 560 questionnaires were applied to young between 14 to 24 years who practiced resistance training in the city of Piracicaba, São Paulo, Brazil. The data was initially inserted into Microsoft Excel for Mac 2011 and analyzed through SPSS software for Windows 20.0. The Spearman (r_s) correlation test was carried in order to evaluate the reproductabilty and for the second phase of the research descriptive statistics and the chi-square test were used. In the validation of the instrument phase, 30 questions had an index of agreement higher or equal to 90%, 7 having evinced an index smaller than 90% were restated or withdrawn. The results evinced a high level of reproducibility in each question, some of them being $r_s = 1.00$ ($p = 0.0001$). The smallest value of reproducibility found was of $r_s = 0.66$ ($p = 0.0001$). After the application of the chi-square test, the prevalence of use of AAS was of 15% for males and 2.6% females. Muscle hypertrophy appeared as the most prevalent goal (22.8%), followed by muscle definition (4.6%), weight loss (2.9%) and the less prevalent was

health (2.6%). Among the hormones, Durateston (43%) was the most cited, followed by Deposteron and Winstrol (34%) and Nandrolone Decanoate (26%). Now the most cited dietary supplements were BCAA with 17%, Whey Protein and Hypercaloric with 15%, followed by Albumin, Maltodextrine and creatine, all with 13% of usage. Our data shows that the instrument developed for the research was valid and reproducible and there is a considerable number of young who practice resistance training in the city of Piracicaba-SP users of hormones and other substances, it being considered a public health problem and which deserves the special attention and conduct of the professionals involved in the health of the adolescent.

Keywords: Questionnaires; Adolescent; Resistance training; Anabolic agents; Health profile.

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***D**edico esse trabalho a minha mãe, Maria José,
pelo amor incondicional, pelo suporte e pelo exemplo de mãe,
mulher e amiga que me sustentou em todos os momentos de minha vida
e por ter me oportunizado a realização de mais um sonho*

AGRADECIMENTOS

*Agradeço primeiramente a **Deus** por ter guiado meus passos e me possibilitar mais essa conquista.*

*À Universidade Estadual de Campinas, na pessoa do Magnífico Reitor **Prof. Dr. José Tadeu Jorge**.*

*À Faculdade de Ciências Médicas, na pessoa do seu Diretor, **Prof. Dr. Mario José Abdalla Saad**.*

*À Coordenadora do Curso de Pós-Graduação em Saúde da Criança e do Adolescente da Universidade Estadual de Campinas, **Profa. Dra. Lilia Freire Rodrigues de Souza Li**.*

*Ao meu orientador **Prof. Dr. José Martins Filho**, da Faculdade de Ciências Médicas da Unicamp, pela orientação, amizade e dedicação, sempre indicando a direção a ser tomada em todos os momentos, pelo exemplo de determinação, competência e batalha de anos na causa infantil. Sumidade na Pediatria Brasileira, sempre muito humilde e querido por todos. Obrigado por ser tão humano e acreditar em meu projeto, lapidar meus conhecimentos contribuindo para minha evolução profissional e pessoal. Obrigado Dr. Martins.*

*À, **Profa. Dra. Maria Aparecida Moysés**, da Faculdade de Ciências Médicas da Unicamp, pelos conhecimentos em pesquisa qualitativa, pela amizade e compreensão nos momentos difíceis em suas disciplinas e por agarrar com unhas e dentes a causa da medicalização infantil. Verdadeiros Doutores como você, Dra. Cida, nos enchem de orgulho.*

*Ao **Prof. Dr. Daniel Carreira Filho**, da Universidade Metropolitana de Santos - UNIMES, pelos ensinamentos e contato dos membros integrantes do comitê de especialistas formado para avaliação do instrumento desenvolvido nesse trabalho.*

Ao **Prof. Dr. Leandro Calazans Nogueira**, do Instituto Federal de Educação, Ciência e Tecnologia do Rio de Janeiro, pelos ensinamentos em validação de instrumentos de medida e pelos intermináveis diálogos sobre ciência e prática.

À **Profa. Dra. Marília Bertoldo Urtado**, da Faculdade de Odontologia de Piracicaba, Universidade Estadual de Campinas, por me direcionar e aconselhar desde o início de minha jornada acadêmica contribuindo com minha formação profissional e como homem. Obrigado pelo apoio, paciência e ensinamentos.

À **Profa. Dra. Maria Imaculada Montebello**, da Universidade Metodista de Piracicaba, por me direcionar nas análises estatísticas, e por não ter medido esforços para me auxiliar, abdicando de seus afazeres. Obrigado pela paciência e ensinamentos.

Aos amigos professores doutores, **Leandro Nogueira, Jonato Prestes, Gerson dos Santos Leire, Denis Foschini, Francisco Luciano Pontes, Felipe Donatto e Claudio Chinágli**, **Wagner Teixeira** que participaram dessa fase da minha vida contribuindo para a conclusão desse trabalho.

A todos do Programa de Pós-Graduação em Saúde da Criança e do Adolescente da Faculdade de Ciências Médicas, Universidade Estadual de Campinas, em especial aos Professores, pela atenção e ensinamentos.

A todos os funcionários da Faculdade Politec – Santa Bárbara D'Oeste, da extinta Universidade Gama Filho-RJ e da Central de Cursos em São Paulo.

Aos meus pais **Maria José Bertoldo Urtado e Carlos Roberto Urtado**, pelo amor e contínuo apoio em todos estes anos, ensinando-me, principalmente, a importância da construção dos valores éticos e morais.

À minha irmã **Marília Bertoldo Urtado** pelo amor e incentivo. Sempre pronta, sempre dedicada, agradeço a presença e apoio constantes, principalmente nos momentos mais difíceis da minha vida. Suas palavras acalmaram meu coração e por isso a concretização dessa etapa. Muito obrigado por existir.

Ao meu **tio José Primo Bertoldo**, pelos ensinamentos espirituais e por contribuir em todos os aspectos de minha formação. Obrigado Jota, você é um exemplo da existência do bem.

Aos meus sobrinhos, **Nícollas Bertoldo Bonetti e Filippo Bertoldo Bonetti** por me ensinarem que a simplicidade e o amor de uma criança nos fortalece e nos renova em um simples olhar.

À **Erica Blascovi de Carvalho**, pelo período de convivência nesses 4 anos de doutorado, por me ajudar em minha existência nesse mundo, pelos momentos ímpares vividos, pelo resgate, por ter purificado meu espírito e por ter me ensinado em grandes e pequenos gestos como é gostoso viver. Meu muito obrigado.

Ao **Prof. Dr. Tadeu Fernandes de Carvalho** e à **Sra. Vania Maria Blascovi de Carvalho** por terem me acolhido como minha família nesses 4 anos de doutoramento e por terem sido meu porto seguro. Tadeu e Vânia, meu muito obrigado.

À **Jaqueline Maria de Matos** pela presença, apoio profissional e emocional na reta final dessa minha trajetória. Obrigado por me oportunizar o desenvolvimento de um trabalho sério, pautado em evidências científicas na PlennaCare – “Clínica de Treinamento Físico” e por estar ao meu lado me ajudando a traçar novas metas com o tão sonhado título de Doutor.

Aos Profs. **Dr. Cláudio de Oliveira Assumpção, Ms. Francisco Mancin, Ms. Sandra Bradifishe e Dra. Carla Parada**, por me oportunizarem a arte de lecionar e compreensão pelos meus afastamentos ao longo dessa jornada.

*Agradeço aos coordenadores das academias de Piracicaba, aos voluntários da pesquisa e aos meus alunos de graduação: **Jaqueline Matos, Roberto Moriggi, Henrique Di Mauro, Sérgio Dias e Bruna Schiavon** que de uma forma ou de outra, contribuíram para realização deste trabalho, gostaria de expressar minha gratidão.*

*Ao **Sr. Walmir Antonio Corradini** e a **Sra. Marcia de Britto**, da secretaria do programa de Pós Graduação em Saúde da Criança e do Adolescente. Obrigado pela atenção prestada nesse período.*

“Lembremo-nos de que o homem interior se renova sempre. A luta enriquece-o de experiência, a dor aprimora-lhe as emoções e o sacrifício tempera-lhe o caráter. O Espírito encarnado sofre constantes transformações por fora, a fim de acrisolar-se e engrandecer-se por dentro.”

Chico Xavier

1. INTRODUÇÃO

O abuso dos EAAs (Esteróides Anabólicos Androgênicos) está alcançando patamares muito altos e seu uso vem se tornando muito comum entre os praticantes de atividades físicas em geral. Os EAAs são substâncias sintéticas derivadas da testosterona, e juntamente com um conjunto de testosterona sintética são utilizadas amplamente para tratamento de várias condições como disfunções no sistema reprodutor, câncer de mama e anemia. No entanto, os esteróides anabolizantes (EAs), tem sido utilizado por pessoas saudáveis para ganho de massa muscular e redução da gordura corporal promovendo síntese protéica e alteração da função anabólica do organismo⁽¹⁻⁴⁾. Os EAAs começaram a ser utilizados por atletas como princípios para aumento da *performance* física na década de 50 e desde então seu uso é crescente. Porém, na década de 70 as substâncias anabólicas foram banidas pelo Comitê Olímpico Internacional⁽⁵⁾.

A administração de EAs em humanos potencializa a síntese protéica e causa hipertrofia da musculatura esquelética. Essa potencialização da síntese protéica é realçada quando os esteróides anabólicos são combinados com o exercício de força⁽⁶⁾.

Vários são os mecanismos sugeridos a respeito dos efeitos ergogênicos da administração dos EAs e o treinamento anaeróbio. Um dos efeitos é a melhora da síntese protéica da musculatura esquelética^(6, 7). Sugere-se, ainda, que há um efeito anti-catabólico em altas concentrações circulantes, contrapondo a ação dos corticosteroides⁽⁸⁾. Outra possibilidade é a ação do esteróide no sistema nervoso central, elevando a atividade do sistema nervoso autônomo adrenérgicos e serotoninérgicos no hipotálamo, aumentando agressividade, permitindo assim aos indivíduos treinarem mais intensamente⁽⁹⁾.

Indivíduos com hipogonadismo e portadores do vírus HIV, associados com perda de peso, após 12 semanas de tratamento com altas doses de decanoato de

nandrolona (DN), apresentam um aumento na retenção de nitrogênio e um aumento de 0,9 a 1,2 kg/semana de massa magra comparado com o grupo placebo, na ausência de treinamento⁽¹⁰⁾. Em pacientes portadores do HIV, sabe-se que o DN causa aumento na massa muscular e no peso corporal quando utilizado continuamente durante 16 semanas; em doses de 200, 400 e 600 mg nas primeiras semanas simultaneamente ao treinamento de força progressivo⁽¹¹⁾.

Em contra partida, muitos estudos têm reportado o uso de Eas no aumento da agressividade, tanto em adolescentes quanto em adultos. O abuso dos EAs nos adolescentes tem sido associado a alterações comportamentais, tais como aumento da agressão física e verbal, irritabilidade e impulsividade^(12, 13), semelhante ao que foi reportado para adultos usuários de EAs⁽¹⁴⁻¹⁶⁾. Embora os efeitos comportamentais do uso sejam semelhantes em adolescentes e adultos, é muito preocupante que os jovens e adolescentes estejam abusando do uso de EAs, uma vez que a adolescência é um período crítico que envolve uma remodelação gonadal mediada pelo cérebro⁽¹⁷⁻²⁵⁾.

Encontra-se também na literatura, porém de forma escassa, o efeito dos EAs sobre a ansiedade. Esses efeitos foram primeiramente reportados por Bitran et al (1993)⁽²⁶⁾, quando observaram o papel de altas doses de proprionato de testosterona em ratos submetidos a um protocolo de “labirinto”. Os autores relataram alterações no desenvolvimento da ansiedade dos animais tratados com a droga.

Estudos de casos em seres humanos demonstram que o EAs impõem uma ampla gama de mudanças nos comportamentos de indivíduos que usam essas substâncias⁽²⁷⁻²⁹⁾. Como exemplo, homens adultos relataram euforia transitória e hipomania no início do curso de administração de EAs⁽³⁰⁾, mas os usuários de longo prazo podem manifestar aumento da ansiedade e irritabilidade, marcada com raiva generalizada⁽²⁹⁻³¹⁾. Os homens que administram as maiores doses de EAs mostraram ter escores elevados de ansiedade e hostilidade, o que reflete tanto a disposição para responder a situações sociais com comportamento

agressivo e a tendência a avaliar pessoas, incluindo a si mesmo, em termos negativos⁽³¹⁾. ne, and testosterone cypionato effects on the rana expressteroids.

Além disso, outros efeitos adversos do uso indiscriminado dos EAs foram relatados por muitos autores, tais como hipertensão, retenção hídrica⁽³²⁾, problemas cardiovasculares, ginecomastia, acnes severas, problemas hepáticos⁽³³⁾, aumento da agressividade e violência⁽³⁴⁾, aumento na resistência à insulina, principalmente por reduzir a tolerância à glicose, eventualmente podendo aparecer os sintomas de diabetes tipo II⁽³⁵⁾.

Com relação aos efeitos cardiovasculares dos EAA, há um crescente número de relatos sobre mortes⁽³⁶⁻³⁸⁾ atribuídas ao uso indiscriminado dos hormônios sintéticos entre usuários de 20 a 30 anos de idade⁽²⁷⁾. Os mecanismos de toxicidade cardiovascular induzida pelos EAs permanecem pouco compreendidos, mas parece que os hormônios sintéticos derivados da testosterona podem, ser diretamente lesivos para o tecido cardíaco, resultando em uma cardiomiopatia caracterizada por uma deficiência sistólica e diastólica⁽³⁹⁻⁴¹⁾ e disfunção ventricular⁽⁴²⁾. Mais recentemente, Shamloul et al. (2014)⁽³⁷⁾ relatou um estudo de caso de um homem de 37 anos usuário de EAs por mais de 2 anos apresentando acidente vascular encefálico (AVE) agudo e insuficiência hepato-renal. Apesar da ausência de sintomas aparentes e sinais de insuficiência cardíaca congestiva, os autores encontraram uma cardiomiopatia dilatada induzida pelo EAs com múltiplos trombos no ventrículo esquerdo levando o usuário a morte.

Em segundo lugar, o uso de EAs aumenta a lipoproteína de baixa densidade e diminui lipoproteína de alta densidade⁽⁴³⁻⁴⁵⁾, e essas anormalidades lipídicas representam um importante fator de risco para doença arterial coronariana⁽⁴⁶⁻⁴⁹⁾. Evidência da indução de aterosclerose induzida por EAs ainda é limitada^(50, 51), porém recentemente, aumento de marcadores de aterotrombose e disfunções endoteliais tem sido documentado em usuários⁽⁵²⁾.

O uso de EAs (consumo não médico) é uma crescente realidade tanto para indivíduos participantes diretos do cenário olímpico, como também para frequentadores de academias de diferentes idades, objetivos de treinamento e objetivos estéticos, além de estudantes de nível médio⁽⁵³⁻⁵⁹⁾. Mesmo que o âmbito esportivo venha possibilitar o caminho, as técnicas e as fórmulas para a conquista dos corpos perfeitos, Carreira Filho (2005)⁽⁶⁰⁾, não acredita que a inspiração à utilização esteja ligada às questões do esporte ou à ampliação do rendimento esportivo.

Na sociedade contemporânea, marcada por valores como o consumismo, o individualismo, a busca do sucesso e o acúmulo de bens materiais, o corpo tornou-se também objeto de consumo. O consumismo permite aos indivíduos se situarem socialmente mediante a posse e acúmulo de capital material e simbólico⁽⁶¹⁾.

Segundo Bourdieu (1977)⁽⁶²⁾, a relação com o corpo é uma forma de experimentar a posição do sujeito no espaço social, medida pela distância entre o corpo real e o corpo ideal legitimado pela sociedade. Estudo de Iriart et al. (2009)⁽⁶³⁾, sugere que a principal razão para o consumo de EAs, é a motivação estética, o que também tem sido encontrado em outros estudos no Brasil^(64, 65). Segundo Iriart (2009)⁽⁶³⁾, a insatisfação com corpo real em comparação ao padrão ideal disseminado pela mídia, o receio de ser excluído do grupo de pares ou de ser desvalorizado, associado a um discurso que associa saúde a “estar em forma” e o imediatismo na obtenção do corpo desejado favorecem o uso de anabolizantes.

Em linhas gerais, fisioculturistas usuários de EAs, relatam maior insatisfação com o corpo, alto desejo de emagrecer, aumento de tendências bulímicas, baixa auto-estima, pensamento perfeccionista, em comparação com qualquer outro grupo de praticantes de exercício. Além disso, relataram que a razão mais importante para o uso de esteróides foi para melhorar a aparência, e

claramente apresentam distúrbios de imagem quando comparados aos não usuários⁽⁶⁶⁾.

Segundo Carreira-Filho (2005)⁽⁶⁰⁾ o culto ao corpo, nos últimos anos, toma grande parte da produção de revistas, jornais, de programas de televisão (canais abertos ou fechados) e, também, da internet. Sistemáticamente, em todos esses meios de comunicação, são apresentados os modelos de corpos perfeitos tanto na programação ou texto quanto nos intervalos ou propagandas. O autor vai além, ao afirmar que as questões relativas a busca de sucesso, ascensão social e poder – por vezes efetivamente conferido pelas drogas e em especial os EAs – ficam ocultos nos discursos moralistas das campanhas ou projetos supostamente de fundo social. Esse panorama fica ainda mais preocupante, pensando-se no adolescente, uma vez que esses jovens encontram-se em um período de descobertas, necessidade de auto-afirmação e a mídia impõe pressão, estímulo ao consumo e narcisismo⁽⁶⁷⁾.

Há forte respaldo na literatura que a prática do treinamento de força tornou-se muito presente na sequência de exercícios físicos⁽⁶⁸⁻⁷⁰⁾ principalmente dos adolescentes^(71, 72). É notório também que nesse tipo de prática esportiva, a utilização de recursos como os EAs, destinada à redução do percentil de gordura e aumento da massa muscular, também vem aumentando^(64, 73-75).

Desde as tentativas iniciais para tratar questões acerca do treinamento de força em pré-pubescentes⁽⁷⁶⁾, o conceito de crianças e adolescentes que participam de diversas formas de exercícios de força, tem sido de interesse crescente entre pesquisadores, clínicos e profissionais da área. Existe agora um corpo convincente de evidências científicas que suporta a participação regular de jovens no treinamento de força para reforçar adaptações positivas na saúde e fitness e melhoria no desempenho esportivo^(71, 73, 77-79). Há um apoio ainda mais forte para o uso do treinamento de força na juventude, desde que estes programas sejam supervisionados por profissionais qualificados e de acordo com as necessidades, objetivos e habilidades de crianças e adolescentes^(79, 80).

Dentro da perspectiva de saúde, evidências indicam que o treinamento de força pode trazer alterações positivas na composição corporal global⁽⁸¹⁾, reduzir a gordura corporal^(82, 83) melhorar a sensibilidade à insulina em adolescentes que estão com sobrepeso⁽⁸⁴⁾ e melhorar a função cardíaca em crianças que são obesas⁽⁸⁵⁾. Também tem sido demonstrado que a participação em um programa de exercícios de força, pode aumentar a densidade mineral óssea⁽⁸⁶⁾, melhorar a saúde do sistema esquelético⁽⁸⁷⁾ e, provavelmente, reduz o risco de lesões relacionadas com o esporte em atletas jovens^(88, 89).

Em contra partida, parece existir uma associação entre a prática do treinamento de força realizado na adolescência com o uso de EAs. Estudos anteriores já haviam mostrado que os adolescentes do sexo masculino usuários de EAs são propensos a participar de futebol e também engajados à prática do treinamento de força⁽⁹⁰⁾.

Faigenbaum et al. (1998)⁽⁹¹⁾, relataram maior uso de EAs na ginástica e musculação em sua amostra, afirmando que a força muscular se correlaciona positivamente com maior percentual de usuários observado. Acredita-se que cerca de 30% a 40% dos adolescentes usuários de EAs não participam de um esporte competitivo atrelado a escola, mas sim participam de musculação ou atividades de levantamento de peso^(90, 92). Há também, relatos que alguns adolescentes utilizam os EAs exclusivamente para a prática do treinamento de força^(93, 94).

Durant et al. (1995)⁽⁷⁵⁾, analisaram 12.272 estudantes nos EUA e verificaram que a prevalência do uso de EAs entre os praticantes de esportes de força foi de 3,11% contra 1,75% dos não praticantes. Nessa mesma vertente, Bahrke et al. (2000)⁽⁷⁴⁾ em uma meta-análise com 47 estudos epidemiológicos, apontam que os principais fatores de risco para o uso de EAs entre adolescentes era ser do sexo masculino e praticar algum esporte, especialmente os de uso de força como o levantamento de peso e o fisiculturismo.

Dados brasileiros também revelam uma possível associação entre eventos de força muscular e o uso de EAs. Silva e Moreau (2003)⁽⁶⁴⁾ encontraram na cidade de São Paulo, que o nível de treinamento muscular é maior entre usuários em geral, tanto no aspecto do tempo de prática do treinamento de força (para o período superior a dois anos, a incidência é 72% contra 28% de não usuários) quanto no aspecto de frequência semanal (para a frequência de 5 a 6 vezes por semana, a incidência é 67% contra 32% de não usuários).

Em relação a padrões de utilização e dados epidemiológicos, muitos estudos vêm ao longo dos anos tentando determinar alguns padrões de utilização de EAs, principalmente nos Estados Unidos. Estudos⁽⁹⁵⁻⁹⁹⁾ apontam que naquele país ocorre uma variação de 2 até 12% relacionado o uso ao sexo masculino e 0,5 até 2,5% relacionado ao sexo feminino.

De acordo com Johnsnton et al. (2002)⁽⁹⁹⁾, nos Estados Unidos a prevalência de utilização entre adolescentes passou de 1,8% a 2,8% durante o período de 1997 a 2001. No Canadá⁽¹⁰⁰⁾, Grã-Bretanha⁽¹⁰¹⁾ e Suécia a prevalência do uso de EAA é de 2,8%, 4,4% e 5,8% respectivamente, sendo que na Suécia, em adolescentes de 15 a 16 anos do sexo masculino, o uso de EAs variou de 2,1 a 10%^(102, 103).

No Brasil, poucos estudos apontam dados epidemiológicos relacionados ao uso de EAs por adolescentes, adultos ou frequentadores de academia. Estudo realizado em Brasília - DF aponta que 11,41% dos alunos do curso de educação física já haviam feito uso de EAs, sendo que em alunos de outros cursos a prevalência foi de 2,88%⁽¹⁰⁴⁾. Em Goiânia – GO, a prevalência de usuários de EAs em academias de musculação foi de 21% em uma população de 183 praticantes do treinamento de força⁽¹⁰⁵⁾.

De acordo com relatos de Galduróz et al. (2002)⁽¹⁰⁶⁾ no I Levantamento Domiciliar sobre uso de Psicotrópicos no país, a prevalência do uso de EAs foi de 0,3% entre os 22.093 entrevistados, sendo 0,6% nos homens e 0,1% nas mulheres.

Carreira Filho (2005)⁽⁶⁰⁾, encontrou um padrão de utilização de EAs maior entre os homens (3,7% comparado a mulheres), adolescentes com idade entre 14 e 18 anos, matriculados e frequentadores de escolas públicas e particulares no município de São Caetano do Sul.

Não há reportado na literatura, evidências sobre o perfil dos usuários, na cidade de Piracicaba-SP. Nesse sentido, o estudo foi realizado nas academias de musculação, devidamente registradas no SEEAATESP (Sindicato dos Estabelecimentos de Esportes Aéreos, Aquáticos e Terrestres do Estado de São Paulo), do município, por ser uma das maiores forças econômicas do interior paulista. De acordo com o Instituto Brasileiro de Geografia e Estatística (IBGE) o município é o 47º mais rico do Brasil e exibe um Produto Interno Bruto (PIB) de R\$ 7,8 bilhões. Piracicaba também é a 5ª cidade do Estado em valor de exportações (US\$ 1,1 bilhão em 2004, um crescimento de 71% em relação ao ano anterior), superando cidades de maior vigor econômico como Guarulhos e Campinas e apresenta Índice de Desenvolvimento Humano de 0,795.

A partir disso, buscar entender o perfil dos usuários, tipos de esteróides utilizados, objetivos com o treinamento assim como os fatores associados, faz-se necessário para respondermos algumas lacunas acerca da utilização.

ARTIGO 1

QUESTIONNAIRE TO ASSESS THE PREVALENCE OF ANABOLIC STEROID USERS AMONG YOUNG RESISTANCE TRAINED

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Short title: Prevalence of anabolic steroid: validated questionnaire

Abbreviations: A- agreement; AAS-Anabolic-androgenic steroid; AASs-anabolic-androgenic steroids; ICF-informed consent form; NA-not agreement; PAS(%)- percent agreement score; p- p-value, Q- question; rs- spearman's correlation; TA-total number of judges who agreed with the item; TJ- total number of expert committees judges.

Key words: Questionnaire Design, Anabolic Agents, Resistance Training

Funding Source: All phases of this study were supported by an CAPES

Financial Disclosure: The remaining authors have no financial relationships relevant to this article to disclose.

Conflict of Interest: authors have no conflicts of interest to disclose.

What's known on this subject: The abuse of anabolic steroids among the youths, can be associated to some factors related to resistance training. It is known that the use in youth can bring about cardiovascular, neuroendocrine and psychosocial problems.

What this study adds: This is the first known study of the development and validation of a questionnaire for the identification of the principal risk factors associated with the use of anabolic steroids in youths engaged in resistance training.

Contributors' Statement

Christiano Bertoldo Urtado: Dr. Urtado designed the study, acquisition of data and drafted the initial manuscript.

Marília Bertoldo Urtado and Erica Blascovi de Carvalho: Dra. Urtado and Ms. de Carvalho carried out the initial analyses, and reviewed and revised the manuscript.

Daniel Carreira Filho: Dr. Carreira Filho, contacted the experts who participated in the committee, some of them members of the Olympic Committee Antidoping .

Maria Imaculada Montebello: Dra. Montevello was responsible for the design and statistical analysis

José Martins Filho: Dr. Martins Filho, president of the Brazilian Academy of Pediatrics accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work

ABSTRACT

Objective: develop, standardize and validate a questionnaire on the use of anabolic steroids in youth regular resistance trained subject. **Methods:** Ten specialists participated in the first phase, after the questionnaire development, followed by Content Validation, using the method of Percentage of Agreement. After adequacy or withdrawal of the questions which achieved less than 80% agreement the a second test-re-testing phase was carried out with 50 youths ages 14 to 24 years engaged in resistance training. Validation of the questions was carried out using Spearman's correlation. **Results:** In the content validity phase of the usability evaluation of instruments, 30 questions had indexes of agreement greater than or equal to 90%, out of which 7 evinced an index of less than 90%, thereupon being restated or withdrawn. For test/retest, results showed a high level reproductibility in each question, some of them being $r_s = 1,00$ ($p=0,0001$). The smallest value of reproductibility found was $r_s = 0,66$ ($p=0,0001$). **Conclusion:** The questionnaire was valid and reproducible. Its use is recommended for the evaluation in epidemiological studies of use of anabolic steroids in youth 14-24 years old, regular resistance trained subject.

INTRODUCTION

Anabolic-androgenic steroid (AAS) compounds are synthetic androgens commonly used by athletes to increase physical strength, endurance, and performance¹. Furthermore, adolescents have used anabolic-androgenic steroids (AASs) to increase the peak physical performance and muscle mass. The non-competing use of AAS has been reported since the 1980s and despite largely studied adverse effects, such as myocardial hypertrophy, hypogonadism, negative changes in serum lipid profile and psychiatric disorders, the use of AAS has seemingly increased²⁻³. Some individuals may experience mental status and behavioral changes with anabolic steroid use, including irritability, aggressiveness, euphoria, depression, mood swings, altered libido, and even psychosis⁴.

Anabolic steroid withdrawal and dependency disorders have also been reported⁵. The prevalence of the use of androgenic anabolic steroids has been poorly studied in word, especially in South America. Studies of the 1990s self-reported the prevalence of use of anabolic steroids in adolescents ranging from 5% to 11% of males⁶⁻⁷ and up to 2.5% of females⁸. A 1993 study of Modesto, California seventh-grade students was the first to document the use of steroids in students aged 12 to 15 years⁹. The overall rate of use reported was 3.8%, with more male students (4.7% versus 3.2% in female students) admitting to using AASs.

In Finland, Mattila et al. (2009)¹⁰ aimed at describing the prevalence, trends and associated factors of dietary supplements and anabolic-androgenic steroids use among Finnish adolescents. The sample comprised 30, 511 adolescents aged 12–18 years, of which 22,519 (74%) answered a questionnaire. AAS use was uncommon; only 53 boys (0.5%) and 20 girls (0.2%) reported AAS use.

In Brazil, some studies show the incidence of users in different age groups. Silva and Moreau (2003)¹¹ found an incidence of general users was 19% and of these, 8% said they were using steroids (users) and 11% had already previously used (former users). In Pernambuco, Santos et al. (2011)¹² studied one hundred twenty-three males, of whom 66.6% had never used AAS and 33.3% were currently using or had previously used, with 95.1% between the ages of 18 and 35 years and 4.8% between the ages of 36 and 50 years.

If we analyze such studies of epidemiological data on young users of AAS, there is no standardization or use of validated instruments. This lack of valid instruments can generate some terms of confounding or bias in research when the objective is to evaluate profile and association factors in users of AAS

Therefore, the objective of this study was to develop, standardize and validate a questionnaire on the use of anabolic steroids in youths practicing resistance exercise.

METHODS

POPULATION

A total of 50 subjects participated in the study. Their sociodemographic characteristics are described in Table 1.

The mean age of the investigated population was 19 years old $\pm$ 3 standard deviation (SD). All individuals signed a informed consent form (ICF). Most of it were male (74%), most subjects (44%) have completed high school however, there was a significant percent (24%) of not finished.

TABLE 1: Sociodemographic characteristics (n=50).

	Level	Frequency	%
Age	14-19 years old	30	60
	20-24 years old	20	40
Sex	Male	37	74
	Female	13	26
School Levels	Up to 8th grade Elementary	2	4
	High School Education - Incomplete	12	24
	High School Education- Complete	22	44
	Higher Education - Incomplete	10	20
	Higher Education - Complete	4	8

DEVELOPMENT OF THE INSTRUMENT

The usability instrument was developed based on the literature about evaluation and usability of questionnaires, and specialist's knowledge regarding this area. The questionnaire collected socio-demo- graphic data (gender, age, school grade), questions about the routine of resistance exercise, weekly attendance, time of regular resistance

exercise, exercise's goals, use of nutritional supplements, knowledge or use of anabolic steroids and nosive effects on health.

The development was carried out following two phases: validation before a committee of specialists from the area and test-retest.

It should be underlined that this study was approved by the ethics and research committee of Faculty of Medical Sciences, State University of Campinas – Unicamp under number 1210/2010.

CONTENT VALIDATION

For the validation of the instrument, a committee of 10 experts was set up and established to review the questionnaire, as proposed by Lynn (1986)¹³. The choice of the number of participants for this stage, is not yet a consensus and may contain from 5 to 20 people¹³⁻¹⁴. The selection of experts was based on the areas covered by the questionnaire: medicine, physical education, physical therapy, nutrition, statistics¹⁵⁻¹⁷ as well as a member related to the target population of the study for assessing comprehension and practicality issues, as suggested by Haynes et al (1995)¹⁴.

The first approach and invitation to participate was made via e-mail containing a cover letter along with the survey guidelines for trial of the instrument, which is adapted to either "agree" and "disagree" subscribed in each of the 35 questions, plus a space for comments and discourse analysis, as necessary.

A scale from 1 to 5 Likert-type assessment for the understanding of issues was used to evaluate the practicality of the instrument and fill out. The Likert scale was composed of a description of meaning from 1 to 5, with 1 being "strongly disagree" and 5 "strongly agree."

After analysis of 10 expert committee, the level of agreement was done using the method of percentage of agreement, according to Tilden (1990)¹⁸ and Topf (1986)¹⁹, as described below:

$$\% \text{ Agreement} = (\text{participants who agree} / \text{total participants}) \times 100$$

TEST-RETEST

After the analysis and considerations of the committee of specialists, the instrument for the test-retest phase was defined. For this phase, 50 questionnaires were applied in regular resistance trained subject with ages 14 to 24 years. The volunteers signed the ICF (in the case of a minor, the term was addressed to the parents or guardian/s) and subsequently, they received the instructions for filling out the as

instrument. In the test phase, the questionnaires were numbered from 1 to 50 as were the ICF. After 15 days, other questionnaires which were also numbered from 1 to 50 were distributed for the retest, each volunteer having received a questionnaire with the same number received on the test in order for the statistic treatment to be carried out.

STATISTICAL ANALYSES

The data were initially inserted in Microsoft Excel for Mac 2011 and analyzed by means of the SPSS software for Windows 20.0. The Spearman correlation test was carried out for the evaluation of reproductibility.

RESULTS

During the development process, the content validity of the usability evaluation of instruments was performed by an expert committee, according to Lynn (1986)¹³ and Willians (2007)²⁰, in order to determine the relevance of the items content of the instrument. Analyses were carried out by the judges, following procedures suggested by specialized literature²¹.

The results of the expert committee meeting are summarized in Table 2.

TABLE 2. Percent agreement score calculated from the expert committee meeting

	Judges										TA	TJ	PAS(%)
	1	2	3	4	5	6	7	8	9	10			
Q1	A	A	A	A	A	NA	A	A	A	A	9	10	90%*
Q2	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q3	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q4	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q5	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q6	A	A	A	A	NA	NA	A	A	A	A	8	10	80%#
Q7	NA	A	A	A	A	NA	A	A	A	A	8	10	80%#
Q8	A	A	A	NA	A	A	A	A	A	A	9	10	90%*
Q9	A	A	A	NA	A	A	A	A	A	A	9	10	90%*
Q10	A	NA	A	A	NA	A	A	NA	A	A	7	10	70%* †
Q11	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q12	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q13	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q14	NA	A	A	A	NA	A	A	A	A	A	8	10	80%#
Q15	NA	A	A	A	NA	A	A	A	A	A	8	10	80%#
Q16	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q17	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q18	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q19	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q20	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q21	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q22	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q23	A	A	A	A	NA	NC	A	A	A	A	8	10	80%#
Q24	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q25	A	A	A	A	NC	A	A	A	A	A	9	10	90%*
Q26	A	A	A	A	A	NA	A	A	A	A	9	10	90%*
Q27	NA	A	A	A	NA	NA	A	A	A	A	7	10	70% †
Q28	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q29	A	A	A	A	A	NA	A	A	A	A	9	10	90%*
Q30	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q31	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q32	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q33	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q34	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q35	A	A	A	A	NA	A	A	A	A	A	9	10	90%*
Q36	A	A	A	A	A	A	A	A	A	A	10	10	100%*
Q37	A	A	A	A	A	A	A	A	A	A	10	10	100%*

TA= total number of judges who agreed with the item; TJ= total number of expert committees judges; PAS(%)= percent agreement score; NA= not agreement; A= agreement. * questions maintained without alteration. # of questions altered at the suggestion of the committee. † questions withdrawn from the instrument.

In the content validity phase of the usability evaluation of instruments, 30 questions had an index of agreement greater or equal to 90%, 7 having evinced an index smaller than 90% were reformulated or withdrawn according to the description following.

In questions 6 (Q6) and 7 (Q7) which achieved an agreement index of 80%, it was suggested by 2 experts that the wording of the question be altered with the addition of a change, respectively. Question 6, was altered from “How much time do you practice every day?” to “What is the daily length of your training?”. In question 7 “Do you train or did you train any sport modality for competition?” it was suggested adding “If yes, which?”

Questions 14 (Q14) “How long have you made use of it” and 15 (Q15) “How long did you use it” which achieved an agreement of index of 80%, were changed by adding the following items in the choices: “5. I used it, but I stopped” and “5. I am still making use of it”, respectively.

In question 23 (Q23) “it was suggested that the addition to the item be made: “Less than 4 weeks”, now questions 10 (Q10) “What number of repetitions do you make (rep.) ?” and 27 (Q27) “Did you used to use or do you use anabolic steroids in “cycles”?” were withdrawn from the instrument due to having achieved less than 80% of agreement among the specialists.

After the phase of specialists’ committee, and the final development of the instrument, the reproductibility of each question was tested in the interval of 15 days and the data of Spearman’s correlation (r_s) and the p-value (p-value) are described in Table 3.

The results show a high level of reproductibility in each question, some of them being $r_s = 1,00$ ($p=0,0001$). The smallest value of reproductibility found was $r_s = 0,66$ ($p=0,0001$) for the question “How many exercises do you perform for the upper limb (arm, chest and back)?” and of $r_s = 0,69$ ($p=0,0001$) for the question “How many exercises you perform for the lower limb (legs)?”.

TABLE 3. Reproducibility of the questions for non user users

Questions	User r_s (p-value) (N=28)	Non users r_s (p-value) (N= 22)
Following point out, please, what is your current level of education.	0,91 (0,0001)	0,84 (0,0001)
Following point out, please, what is the current level of your mother's education.	1,00 (0,0001)	1,00 (0,0001)
Following point out, please, what is the current level of your father's education	0,99 (0,0001)	1,00 (0,0001)
For how long have you actively taken part in resistance training?	1,00 (0,0001)	0,99 (0,0001)
How many times a week do you engage in resistance training?	0,97 (0,0001)	0,89 (0,0001)
What time do you spend daily in your training?	0,98 (0,0001)	1,00 (0,0001)
Do you train or did you train any sport modality for competition?	0,86 (0,0001)	1,00 (0,0001)
What motivated you to engage in resistance training?	0,80 (0,0001)	1,00 (0,0001)
What is (are) your goals for resistance training? * (you can jot down more than one)	1,00 (0,0001)	1,00 (0,0001)
How many exercises do you perform for the upper limb (arm, chest and back)?	0,90 (0,0001)	0,66 (0,001)
How many exercises do you perform for the lower limb (legs)?	0,83 (0,0001)	0,69 (0,001)
Have you ever used or do you use nutrition supplements?	1,00 (0,0001)	1,00 (0,0001)
For how long have you made use?	0,99 (0,0001)	0,99 (0,0001)
For how long did you use?	0,90 (0,0001)	1,00 (0,0001)
Are you on a diet to gain or lose weight?	0,97 (0,0001)	0,97 (0,0001)
If yes, who suggested that diet?	0,98 (0,0001)	1,00 (0,0001)
Do you know the name of any anabolic steroid?	1,00 (0,0001)	1,00 (0,0001)
Do you know someone your age who has ever used an anabolic steroid?	1,00 (0,0001)	1,00 (0,0001)
Has the use of anabolic steroids ever been made to you?	0,81 (0,0001)	1,00 (0,0001)
Have you ever used an anabolic steroid?	Variable of stratification of the group	
What was your age, in years, the first time you made use of an anabolic steroid?	Characteristic of the sample	Question not applicable
During how long did you use it?	0,72 (0,0001)	Question not applicable
What were the substances you used?	Characteristic of the sample	Question not applicable
Who gave you or gives you the injections?	0,99 (0,0001)	Question not applicable
Did you share syringes or needles with anyone?	1,00 (0,0001)	Question not applicable
Who advised you on the use of an anabolic?	0,98 (0,0001)	Question not applicable
For what reason did you use anabolic steroids?	1,00 (0,0001)	Question not

Questions	User r_s (p-value) (N=28)	Non users r_s (p-value) (N= 22)
Did or do you feel stronger due to use?	1,00 (0,0001)	applicable Question not applicable
Do or did you feel more violent or stronger due to use?	1,00 (0,0001)	Question not applicable
Did you have any health problem due to the use of anabolic steroids?	1,00 (0,0001)	Question not applicable
Where did you acquire the substances?	0,98 (0,0001)	Question not applicable
Do you consider getting anabolic steroids without a prescription as:	0,96 (0,0001)	1,00 (0,0001)
Do you know any undesirable effect caused by anabolic steroids?	1,00 (0,0001)	1,00 (0,0001)
Would you use anabolic steroids to improve your athletic performance?	0,95 (0,0001)	1,00 (0,0001)
Would you use anabolic steroids to have a more beautiful body?	1,00 (0,0001)	1,00 (0,0001)

DISCUSSION

The aim of study was to develop and validate a questionnaire on the use of anabolic steroids in adolescents.

High levels of use of anabolic-androgenic steroids (AAS) have been attributed to professional football players, weightlifters, power lifters, body- builders and throwers in track and field events since the 1960s²². In adolescents, long-term comparison of anabolic steroid use (from 1989-1996) indicates that use among males and females has decreased significantly ($P<0.05$). However, for females the low point in lifetime steroid use was reached in 1991, with subsequent significant ($P<0.05$) increases in use being reported in several national data sets. For adolescent males, after declining sharply between 1989 and 1991, steroid use has generally been stable since 1991²³.

Up to the present date, we are unaware of a study for the validation of a questionnaire regarding the use of anabolic steroids among youths of 14 to 24 year regular resistance trained subject. The study of Araújo et al. (2002)²⁴, makes mention of the study used for evaluating the use of anabolic steroids among people who practice resistance training. However, in this work, the authors merely cite the value of correlation of the instrument used, without mentioning the procedures for the construction of the same, besides not presenting statistic values for each question used. Another diverging

point from the present study was the age level of the sample used, 14 to 51 years, while in our study the age level was between 14 to 24 years.

According to Silva and Moreau (2003)¹¹, who studied the prevalence of AAS those who practice at an age level of between 20 to 40 years, questionnaires which are self filling out normally need a validation. Nonetheless, the authors did not carry out this procedure, arguing that for AAS, as well as for abuse drugs, there is no gold standard (reference) for measuring this illegal practice and surrounded by biases, since the user makes an effort to cover signs of his use²⁵. Corroborating with Silva and Moreau, we believe that with a standard and validated instrument, the aspects related to the illegal practice, as well as the profile of young users of anabolics and associated risk factors can be better explored and in a more homogeneous manner in other studies.

Another reason because of which we consider validation of an instrument necessary for this measure, is based on Ferencik's study (1996)²⁶ which compared the use of a questionnaire with urine sample of 61 men engaged in resistance training. The author showed that 3 out of 17 participants in the research reported as non-users of AAS however, were reported as having detected evidences of steroids in the urine. It should be underlined that in Ferencik's study, there is no citation of patterning of the questions or even the same relevance of the same for identifying as possible AAS user.

The validity of the content in the present study was carried out by a Committee of Specialists, capable of if the items, apt to judge whether the items answer the purpose of the instrument, in addition to analyzing it in a general form²⁷. The participation of the specialists is in agreement with that which is commended by the literature, guaranteeing the adequate procedure for validation¹³⁻¹⁴. It is suggested that a minimum number of five specialists make up this committee¹³, it being that they should be chosen according to their experience with instruments of measure¹⁸. In the present study, the number of judges comprising the committee was ten people, in agreement with methodological guidelines.

After the use of a committee of specialists for validation, there is the methodology which has been being used and suggested by some authors²⁸⁻³¹, two questions ("what is the number of repetitions (rep.) you do?" and "Did you or do you use anabolic steroids in "cycles"?") were withdrawn from the instrument for having achieved less than 80% agreement among the specialists, was suggested by Wynd et al. (2003)²¹.

According to Polit and Hunger (1995)³², validating an instrument is extremely important in order to validate the quality of the same. The trust worthiness of the instruments of measure has been defined as the capacity of reproducing a result in a consistent way through time, showing aspects about coherence, precision, equivalence

and homogeneity. This can be evaluated by three methods - stability (test-retest), homogeneity and equivalence (inter-observers)³³. The present research evaluated stability (test-retest) of the questionnaire. For this phase the reproductibility of the questions using Spearman's correlation was used.

The questionnaire evinced a high level of reproductibility in each question, some of them being $r_s = 1,00$ ($p=0,0001$). The smallest value of reproductibility found $r_s = 0,66$ ($p=0,0001$) for the question "How many exercises you perform for the upper body (arm, chest and back)?" and $r_s = 0,69$ ($p=0,0001$) for the question "How many exercises do you perform for the lower body (legs)?"

The smallest reproductibility of these questions was found in the group of non-users of anabolic steroids. One of the hypotheses for this result, could be related to the time of resistance training between users and non-users. Silva e Moreau (2003)¹¹ while studying individuals who engage in resistance exercise and the use of anabolic steroids in the city of São Paulo, showed that the time of exercise is greater among users, with an incidence of 72% against 28% non-users. This being so, it is probable that the non-user anabolic steroids users are less experienced, (time of exercise in months) in resistance training, and the period of 15 days between the test and retest the number of exercises was possibly altered according to the literature furthering a greater degree of neural adaptation with the exercise for beginners³⁴⁻⁴¹.

We underline that this instrument was validated in youths between 14 to 24 years, regular resistance trained subject. Future studies can be carried out for validation or adaptation in different age levels or even in other groups.

CONCLUSION

The questionnaire was valid and reproducible. Its use is recommended for the evaluation in epidemiological studies of use of anabolic steroids in youth 14-24 years old engaging in resistance exercise.

ACKNOWLEDGEMENTS

We wish to acknowledge CAPES for financing this research, the participants of the committee of specialists who evaluated the instrument of research, the youth volunteers who participated, the parents or guardians of the minors, the resistance training gyms and the coordinators who made the access to the same possible.

REFERENCES

1. Urtado CB, Pereira GB, Urtado MB, de Carvalho EB, Leite Gdos S, Donatto FF, et al. Resistance training associated with the administration of anabolic-androgenic steroids improves insulin sensitivity in ovariectomized rats. *Diabetes Metab Syndr Obes.* 2011;4:385-91.
2. Casavant MJ, Blake K, Griffith J, Yates A, Copley LM. Consequences of use of anabolic androgenic steroids. *Pediatr Clin North Am.* 2007 Aug;54(4):677-90, x.
3. Mattila VM, Rimpela A, Jormanainen V, Sahi T, Pihlajamäki H. Anabolic-androgenic steroid use among young Finnish males. *Scand J Med Sci Sports.* 2010 Apr;20(2):330-5.
4. Bahrke MS, Yesalis CE, 3rd, Wright JE. Psychological and behavioural effects of endogenous testosterone levels and anabolic-androgenic steroids among males. A review. *Sports Med.* 1990 Nov;10(5):303-37.
5. Kashkin KB, Kleber HD. Hooked on hormones? An anabolic steroid addiction hypothesis. *JAMA.* 1989 Dec 8;262(22):3166-70.
6. Windsor R, Dumitru D. Prevalence of anabolic steroid use by male and female adolescents. *Med Sci Sports Exerc.* 1989 Oct;21(5):494-7.
7. Johnson MD, Jay MS, Shoup B, Rickert VI. Anabolic steroid use by male adolescents. *Pediatrics.* 1989 Jun;83(6):921-4.
8. Terney R, McLain LG. The use of anabolic steroids in high school students. *Am J Dis Child.* 1990 Jan;144(1):99-103.
9. Radakovich J, Broderick P, Pickell G. Rate of anabolic-androgenic steroid use among students in junior high school. *J Am Board Fam Pract.* 1993 Jul-Aug;6(4):341-5.
10. Mattila V, Parkkari J, Laakso L, Pihlajamäki H, Rimpelä A. Use of dietary supplements and anabolic-androgenic steroids among Finnish adolescents in 1991-2005. *Eur J Public Health.* 2010;20(3):306-11.
11. Silva LSMF, Moreau RLdM. Uso de esteróides anabólicos androgênicos por praticantes de musculação de grandes academias da cidade de São Paulo. *Revista Brasileira de Ciências Farmacêuticas.* 2003;39(3):327-33.

12. Santos AM, da Rocha MS, da Silva MF. Illicit use and abuse of anabolic-androgenic steroids among Brazilian bodybuilders. *Subst Use Misuse*. 2011;46(6):742-8.
13. Lynn M. Determination and quantification of content validity. *Nurs Res*. 1986;35(6):382-5.
14. Haynes S, Richard D, Kubany E. Content validity in psychological assessment: a functional approach to concepts and methods. *Psychol Assess*. 1995;7(3):238-47.
15. Grant J, Davis L. Selection and use of content experts for instrument development. *Res Nurs Health*. 1997;20(3):269-74.
16. Davis L. Instrument review: getting the most from a panel of experts. *Appl Nurs Res*. 1992;5(4):194-7.
17. Beaton D, Bombardier C, Guillemin F, Ferraz M. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*. 2000;25(24):3186- 91.
18. Tilden VP, Nelson CA, May BA. Use of qualitative methods to enhance content validity. *Nurs Res*. 1990 May-Jun;39(3):172-5.
19. Topf M. Three estimates of interrater reliability for nominal data. *Nurs Res*. 1986 Jul-Aug;35(4):253-5.
20. Williams RA. Women's health content validity of the Family Medicine In-training Examination. *Fam Med*. 2007 Sep;39(8):572-7.
21. Wynd CA, Schmidt B, Schaefer MA. Two quantitative approaches for estimating content validity. *West J Nurs Res*. 2003 Aug;25(5):508-18.
22. Bahrke MS, Yesalis CE, Kopstein AN, Stephens JA. Risk factors associated with anabolic-androgenic steroid use among adolescents. *Sports Med*. 2000 Jun;29(6):397-405.
23. Yesalis CE, Barsukiewicz CK, Kopstein AN, Bahrke MS. Trends in anabolic-androgenic steroid use among adolescents. *Arch Pediatr Adolesc Med*. 1997 Dec;151(12):1197-206.
24. Araújo L, Andreolo J, Silva M. Utilização de suplemento alimentar e anabolizante por praticantes de musculação nas academias de Goiânia-GO. *Rev Bras Ciên Movim*. 2002;10(3):13-8.

25. Carlini-Cotrim B, Barbosa M. *Pesquisa epidemiológica sobre o uso de drogas entre estudantes: um manual de orientações gerais*. São Paulo: CEBRID, Escola Paulista de Medicina; 1993.
26. Ferenchick G. Validity of self-report in identifying anabolic steroid use among weightlifters. *J Gen Intern Med*. 1996;11(9):554-6.
27. Yusuf H, Gherunpong S, Sheiham A, Tsakos G. Validation of an English version of the Child-OIDP index, an oral health-related quality of life measure for children. *Health Qual Life Outcomes*. 2006;4:38.
28. Soleymanian A, Niknami S, Hajizadeh E, Shojaeizadeh D, Montazeri A. Development and validation of a health belief model based instrument for measuring factors influencing exercise behaviors to prevent osteoporosis in pre-menopausal women (HOPE). *BMC Musculoskelet Disord*. 2014;15(1):61.
29. Coluci M, Alexandre N. Developing of a questionnaire to evaluate the usability of assessment instruments. *Rev enferm*. 2009 jul/set;17(3):378-82.
30. Kroll T, Kehn M, Ho PS, Groah S. The SCI Exercise Self-Efficacy Scale (ESES): development and psychometric properties. *Int J Behav Nutr Phys Act*. 2007;4(1):34.
31. Florindo A, Romero A, Peres S, Silva M, Slater B. Development and validation of a physical activity assessment questionnaire for adolescents. *Rev Saude Publica*. 2006 Oct;40(5):802-9.
32. Polit D, Hungler B. *Fundamentos de pesquisa em enfermagem*. 3a ed. Porto Alegre: Artes Médicas; 1995.
33. Alexandre N, Coluci M. Validade de conteúdo nos processos de construção e adaptação de instrumentos de medidas. *Ciência & Saúde Coletiva*. 2011;16(7):3061-8.
34. Lloyd RS, Faigenbaum AD, Stone MH, Oliver JL, Jeffreys I, Moody JA, et al. Position statement on youth resistance training: the 2014 International Consensus. *Br J Sports Med*. 2014 Apr;48(7):498-505.
35. Faigenbaum A, Lloyd R, Myer G. Youth resistance training: past practices, new perspectives, and future directions. *Pediatr Exerc Sci*. 2013 Nov;25(4):591-604.
36. Garber C, Blissmer B, Deschenes M, Franklin B, Lamonte M, Lee I, et al. American College of Sports Medicine. American College of Sports Medicine position stand.

Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Med Sci Sports Exerc.* 2011 Jul;43(7):1334-59.

37. Michaleff Z, Kamper S. Effects of resistance training in children and adolescents: a meta-analysis. *Br J Sports Med.* 2011;45(9):755.
38. Behringer M, Vom Heede A, Yue Z, Mester J. Effects of resistance training in children and adolescents: a meta-analysis. *Pediatrics.* 2010;126(5):e1199-210.
39. Faigenbaum A, Kraemer W, Blimkie C, Jeffreys I, Micheli L, Nitka M, et al. Youth resistance training: updated position statement paper from the national strength and conditioning association. *J Strength Cond Res.* 2009 Aug;23(5 Suppl):S60-79.
40. Gabriel D, Kamen G, Frost G. Neural adaptations to resistive exercise: mechanisms and recommendations for training practices. *Sports Med.* 2006;36(2):133-49
41. Kraemer WJ, Ratamess NA. Fundamentals of resistance training: progression and exercise prescription. *Med Sci Sports Exerc.* 2004 Apr;36(4):674-88.

ARTIGO 2

USE OF ANABOLIC STEROIDS IN SUBJECT'S REGULAR RESISTANCE TRAINED AMONG 14 AND 24 YEARS IN PIRACICABA-SÃO PAULO, BRAZIL

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ABSTRACT

The synthetic hormones derived from testosterone have been used by many athletes, practicing diverse sport modalities in order to improve their performance and the use is also extended to young. Related epidemiological data of the use of these hormones by young resistance trained subjects, particularly in Brazil are lacking. Our purpose was to evaluate the prevalence of anabolic steroids (AS) in regular resistance trained subjects in the city of Piracicaba-SP, besides identifying risk factors, the most frequently used drugs and the profiles of the users. A previously validated questionnaire was applied to young between 14 to 24 years resistance trained subjects in gyms registered in a respected agency of the kind. A descriptive analysis of the results and among variables was done using the chi-square test. The prevalence was 15% for the male sex and 2,6% for the female sex. Muscle hypertrophy appeared to be the most prevalent objective (22,8%), followed by muscle definition (4,6%), weight loss (2,9%) and the less prevalent was health (2,6%). Among the hormones, Durateston was mentioned most (43%), followed by Deposteron and Winstrol (34%) and Nandrolone Decanoate (26%). Now the most cited dietary supplements were BCAA with 17%, whey protein and hypercaloric with 15%,

followed by, maltodextrine, albumin and creatine, all with 13% of usage. Our data evinced that an important number of regular resistance trained subjects in the city of Piracicaba-SP were users of hormones and other substances, it being considered a public health problem and which serves attention and a special behavior of personal trainers and coaches.

KEY WORDS: prevalence, profile, hormones, youngster, resistance exercise

INTRODUCTION

The abuse of AS has reached very high levels and its use has become very common among the fitness in general. Anabolic-androgenic steroid (AAS) compounds are synthetic androgens commonly used by athletes to increase physical strength, endurance, and performance⁽¹⁾. The AAS began to be used by athletes in order to increase physical performance in the decade of the 50's and ever since then, its use has been on the rise. Nonetheless, in the decade of the 70's anabolic substances were banned by the International Olympic Committee⁽²⁾.

The administration of AS in humans raises protein synthesis and causes skeletal muscle hypertrophy. This heightening of the power of the protein synthesis when steroid anabolics are mixed with resistance exercises (RT)⁽³⁾. On the other hand, the adverse effects of the indiscriminate use of the AS were associated by many authors, such as in the case of hypertension, hydric retention⁽⁴⁾, cardiovascular problems, gynecomasty, acute cases of acne, hepatic problems⁽⁵⁾, tumors in specific glands, such as the adrenals⁽⁶⁾ an increase of aggressiveness and violence⁽⁷⁾, and its even being possible to cause an insulin resistance increase, especially due to eventual appearance of type II diabetes⁽⁸⁾.

The use of AS (non medical consuming) is an increasing reality in direct individual subject use from the Olympic scenario, as well as for different aged gym users, training as well as esthetic goals, in addition to high school students⁽⁹⁻¹²⁾.

There are signs in the literature that the practice of RT has become part of the physical exercises sequence especially of⁽¹³⁻¹⁴⁾, teenagers and young⁽¹⁵⁻¹⁶⁾. Although RT in adolescents was a much debated issue within the last 3 decades, the majority of recent literature delineates that it is effective and safe in all phases of maturity if qualified supervision, age-appropriate program design, and gradual progression are used⁽¹⁶⁻¹⁷⁾. It is also noteworthy that this type of sports practice, the use of resources such as AS, aimed at the reduction of the percentage of fat and increase of muscle mass, has also been on the increase^(2, 18-20).

Regarding the patterns of AAS use and epidemiological data, many studies have been trying to determine throughout the years,, especially in the United States. Studies⁽²¹⁻²³⁾ evince that in that country there is a 2 to 12% variation relating the use to the male sex and a 0,5 to 2,5% related to the female sex.

According to Johnsnton et al. (2002)⁽²³⁾, in the United States the prevalence of use among teenagers went from 1.8% to 2.8% during the period of 1997 to 2001. In Canada⁽²⁴⁾, Great Britain⁽²⁵⁾ and Sweden, the prevalence of EEA use is from 2.8%, 4.4% and 5.8% respectively, it being that in Sweden, in teenagers from 15 and 16 years old of the male sex, the use of EAA varied from 2,1 to 10%⁽²⁶⁾.

In Brazil, few studies evince epidemiological data related to the use of AS by teenagers, adults or gym users. Therefore, the objective of this study was to evaluate the prevalence of the use of AS in resistance training subjects in the city of Piracicaba-SP, evaluate the association of the use of steroids with some risk factors in addition to identifying the profile of users.

METHODS

Target Population of Study

The study was carried out in resistance training gyms duly registered with the SEEAATESP (Union of Institutions of Aerial, Water and Land Sports of the State of São Paulo), of the municipality of Piracicaba, due to its being one of the greatest economic forces of the Paulista hinterland. According to the Brazilian Institute of Geography and Statistics (IBGE) the municipality is the 47th richest of Brazil and shows a Gross Internal Product (PIB) of R\$ 7,8 billion. Piracicaba is also the 5th city of the State in exportation values (US\$ 1,1 billion in 2004, an increase of 71% in relation to the previous year), surpassing cities of greater economic strength such as Guarulhos and Campinas and evincing a 0.795 Index of Human Development.

Inclusion Criteria

Included in the study all present in the resistance training room during the period of the application of questionnaires and duly authorized by the parents or guardians in the case of minors. The subjects selected for the study should be 14 years at least, taking the year of birth into account, not including the month and day, though that information was also collected. It should be underlined that that study was approved by the Ethics and

Research Committee of Faculty of Medical Sciences, State University of Campinas – UNICAMP under number 1210/2010.

Exclusion Criteria

All of the following subjects including one of the following characteristics were eliminated from the study: a) being under 14 years of age; b) mistakes in the filling out of the questionnaire; c) erasures or impossibility of the identification of the answers; d) student users of resistance training as rehabilitation of some pathology; e) those not agreeing to take part in the study ; e f) students whose academies did not allow the carrying out of the research.

Questionnaire

The usability instrument was developed based on the literature about evaluation and usability of questionnaires, and specialist's knowledge about this area. The questionnaire collected socio-demo-graphic data (gender, age, school grade), questions regarding routine in strength exercise (number of sets, repetitions, weekly attendance), time of RT, goals of practice, use of dietary supplements, knowledge or use of anabolic steroids and their pernicious health effects. It is noteworthy that the questionnaire used was validated in a previous study.

Characteristics of Sample

Out of the 231 institutions registered in a specific agency, institutions not offering RT as one their modalities were excluded from the study, there being: 93 (40,2%) institutions which offered sports modalities: football, basketball, volleyball, handball, swimming, dancing, Brazilian Jiu-Jitsu, cycling, automobilism and racket sports; 55 (23,8%) institutions of sports consultancy and/or city sports associations; 38 (16,4%) recreation, leisure and workplace exercises institutions and 20 (8,6%) there were no other institutions. After the exclusion , 25 gyms which presented RT as one of its modalities and which were duly regularized in the specific organ were included for the application of the questionnaire. Out of these, 2 gyms (8%) did not allow carrying out the study, alleging fear in the divulgement of the information and/or change in the RT routine.

560 questionnaires were applied to the target population in 23 registered gyms, there being, 49 (8,7%) of these excluded due to erasure or impossibility of identification of answers, one reaching n= 511. Table 1 evinces the characteristics of the sample, which was the object of study.

The median age of the subjects analyzed was 16.9 (± 2.6 years) for subjects of the female sex and 18 (± 2.9 years) for subjects of the male sex. The percentage distribution is shown in Table 1.

TABLE 1.

Statistical analyses

For the analysis of the prevalence of use of AS a descriptive analysis of the results was carried out, and there was also an association of the variables of the study by means of the chi – square test (χ^2). The software used was the SPSS 20.0 for Windows.

RESULTS

The results obtained based on the sample of 511 questionnaires, evinced a prevalence of 9.3% regarding AS use. The AS prevalence of use among the subjects of the masculine sex was 15%, while for the feminine gender subjects, it was 2.6%. The most prevalent age use was between 20 to 24 years with 19.3%. It was possible to observe a statistically significant association between the use of AS with gender ($\chi^2= 23.11$, $p<0.0001$), and age ($\chi^2= 17.84$, $p<0.0001$) (Table 2).

TABLE 2

Still with regards to the demographic variables, 13.3% of AS users were in higher education, 8.7% had an eighth education and 8.3%, high school. Searching for an identification of association between the degree of education and the use of AS, there was not found a statistically significant difference ($\chi^2= 2.22$, $p=0.33$).

The degree of parental education was also a research point in this work. Regarding the mothers, 12.9 % of AS users , reported that their mothers evinced up to an 8th grade of elementary school , while 11.2% of user parents, went up to high school. There was no significant association evinced for degree of education of the mother ($\chi^2= 3.2$, $p=0.52$) and of the father ($\chi^2= 2.29$, $p=0.68$) with AS usage.

Searching to find factors associated with the usage of the AS, in order to understand the profile of those users, questions regarding the time of RT practice , daily length of the exercise, the practice of some sports modality, goals with the RT, use of dietary supplements and nutritional control were explored (Table 3).

With regard to the length of practice time of the RT, 19.3% of the volunteers Who reported AS use, were inserted in the exercise routine already for 12 months and a statistically significant association between time of practice (in months) and AS use ($\chi^2= 36.56$, $p<0.0001$) could be observed. Still regarding the RT practice routine, 13% of the EAA users reported that the time of exercise (in minutes) is between 90 to 120 minutes, while no user reported training less than 30 minutes per session. There was no statistically significant association found between the length of RT in minutes with the use of AS ($\chi^2= 4.16$, $p=0.38$), as well as the practice of some sports modality having competitive goals and the use of AS, in which only 7.6% of the users declared they had already taken part in some competition ($\chi^2= 2.37$, $p=0.50$).

The goal of the subjects with the RT was also studied. The results point out that there is a statistically significant association ($\chi^2= 2.37$, $p=0.50$) between this factor with the use of AS. Muscle hypertrophy appeared as a prevalent goal (22.8%), followed by muscle definition (4.6%), weight loss (2.9%) and the less prevalent were the EAA users which had health as main goal (2.6%).

The use of AS was more prevalent between the users of dietary supplements when compared to young who did not use dietary supplements ($\chi^2= 64.87$, $p<0.0001$). Among the volunteers which tested positively for the use of anabolic steroid substances, 23.5% reported using ergogenic resources, 14.1% reported having made use at some time and only 0.4% had never used them. The use of AS, also showed itself in association with nutritional control ($\chi^2= 28.86$, $p<0.0001$). When questioned about “being or not being on a diet”, 22.1% of the users were on a diet for gaining weight , 6.4% for weight loss and only 2.6% (based on the sample of 511) of the users were not on a diet for gaining or losing weight.

TABLE 3

For the identification of the AS user profile, the use of synthetic hormones and the use of sport modalities connected with declared users were studied. It can be observed that Brazilian Jiu-Jitsu was the sports which was most undertaken by them (5 users [29.4%], 17 practicing), followed by football (8 users [12.1%], 66 practicing). Now the less practiced modalities were: volleyball (1 user [2.6%], 38 practicing); handball (1 user [2.6%], 38 practicing) and swimming (1 user [1.6%], 54 practicing). The results are summarized in Table 3.

TABLE 4.

Two other aspects identified in order to sketch the profiles of AS users, were the hormones and supplements which were most used. With regard to the hormones, the most cited was Durateston, there being young reporting use, which corresponds to 43% of the sample, followed by Deposteron and Winstrol (16 users, 34%) and Nandrolone Decanoate (14 users, 26%). The most cited dietary supplements by young who reported to be users of EAAs were BCAA with 17%, whey protein and hypercaloric with 15%, followed by maltodextrine and creatine all with 13% of use (Tables 5 and 6).

TABLE 5.

TABLE 6.

Upon evaluating the attitudes and perceptions regarding AS, the differences between those who declared themselves as being users as well as users and young who denied using AS (non-users) appeared in some questions (Table 6). More users than non-users reported they would use AS in order to have a more beautiful body (74% of the users x 11.5% of the non-users), beside that, the users reported that they would use hormones in order to improve athletic performance (68% of the users x 9% of the non-users). The differences became less significant when we evaluate the knowledge regarding some undesirable effect caused by the use of AS, there being 53% of the declared users owning up to having knowledge about side effects, while 47% of the non-users responded “yes” to knowledge of undesirable effects. Acquiring AS without a prescription also evinced a high percentage of users, (65%) as well as for non-users (79%).

TABLE 7

DISCUSSION

The goal of this study was to study the prevalence of the use of anabolic steroids in young regular resistance trained in the city of Piracicaba-SP, Brazil, the profile of these users, beside associations of use with some risk factors.

High levels of use of AAS have been attributed to professional football players, weightlifters, power lifters, body-builders and throwers in track and field events since the 1960s⁽¹⁹⁾. In adolescents, long-term comparison of anabolic steroid use (from 1989-1996) shows that use among males and females has decreased significantly. However, for females the low point in lifetime steroid use was reached in 1991, with subsequent significant increases in use being reported in several national data sets. For adolescent

males, after declining sharply between 1989 and 1991, steroid use has generally been stable since 1991⁽²⁸⁾.

Many studies in the world, are carried out in order to identify the prevalence of use of AS. AAS use among athletes has been reported to be less than 10% among US athletes⁽²⁹⁾. Lifetime prevalence of anabolic steroid use among gym users in Sweden was 3.9%⁽³⁰⁾. Nigerian sportsmen reported a prevalence of 5.6%⁽³¹⁾. In Iran, the figures obtained are around 20%⁽³²⁾. In New England, all 5.3% of the boys and 1.5% of the girls reported anabolic steroid use⁽³³⁾. In Texas, steroid use was present in approximately 11% of the population surveyed⁽³⁴⁾. A 1993 study of Radakovich, in California, of seventh-grade students was the first to document the use of steroids in students aged 12 to 15 years. The overall rate of use reported was 3.8%, with more male students (4.7% versus 3.2% in female students) admitting to using AAS. In Finland, Mattila et al. (2009)⁽³⁵⁾ aimed at describing the prevalence, trends and associated factors of dietary supplements and anabolic-androgenic steroids use among Finnish adolescents. The sample comprised 30,511 adolescents aged 12–18 years, out of which 22,519 (74%) answered a questionnaire. AAS use was uncommon; only 53 boys (0.5%) and 20 girls (0.2%) reported AAS use.

In Brazil, some studies show the incidence of users in different age groups. Silva and Moreau (2003)⁽³⁶⁾ found the incidence of general users was 19% and of these, 8% said they were using steroids (users) and 11% had already previously used (former users). In Pernambuco, Santos et al. (2011)⁽³⁷⁾ studied one hundred twenty-three males, of whom 66.6% had never used AAS and 33.3% were currently using or had previously made use of, with 95.1% between the ages of 18 and 35 years and 4.8% between the ages of 36 and 50 years. Silva et al. (2007)⁽³⁸⁾ showed that the current or past use of AS in those practicing RT in the Porto Alegre gyms was 11.1%. In João Pessoa, AS prevalence use was 20.6%; mostly young men (98.1%)⁽³⁹⁾. In the present study, specifically in the city of Piracicaba-SP, we found a prevalence of 9.3% AS users, such as Araújo et al. (2002)⁽⁴⁰⁾, who found a prevalence of 9% in the city of Goiânia (N=183) and similar to those found in United States gyms⁽⁴¹⁻⁴²⁾. It should be underlined that in Brazil up to the present moment, from what is known by us, our study had an epidemiological design with a greater “n” found (resistance trained subjects approached “in loco”) in the literature up to that moment (n=511).

Generally, the relative risk of AS use is at least two to three times greater for male adolescents. The review of numerous studies shows a wide variation in the age range of AS users^(21, 42). The present study corroborates the findings in the literature, since our

results evince a 15% prevalence of male users, while for female subjects it was 2.6%. However, this difference showed itself in a more accentuated way in our study, nearly six times greater risk for male young.

Now with regard to the age group, we found a prevalence of 19.3% among young from 20 to 24 years and 6.3% among young from 14 to 19 years. The association between the age group and the use of AS, was also evaluated by Silva and (2003)⁽¹⁸⁾, with results very similar to ours, since the authors found the beginning of use by the population below 20 years (5%); with an increase of 18% in the 20 to 24 years age group.

The level of education with the greatest prevalence of AS use was higher education (13.3%), however we did not find a significant association with the use of AS ($p=0.33$), differently from the results found by that of Siqueira Nogueira et al. (2014)⁽³⁹⁾ who observed low education level users (46.7%) in João Pessoa.

AAS compounds are synthetic androgens commonly used by athletes to increase physical strength, endurance, and performance⁽¹⁾. The anabolic action affects protein metabolism by stimulation of protein synthesis and inhibition of protein breakdown⁽⁴³⁾.

This stimulus of the protein synthesis occurred, since testosterone is converted into other active metabolites such as estradiol, androsterone, 3- α -hidroxi-5- β -androsta-17-one and androstenedione. Such active substances, including reduced metabolites (5- α -reductase) go through the cellular membrane tying themselves to cytoplasmatic receptors for steroids with high specificity and low affinity. The complex drug-receptor is translocated to the nucleus and ties itself to the chromatin, inducing the RNA transcription and the production of specific proteins and causing its effects⁽⁴⁴⁾.

Regarding the most used hormones, our study proved itself different from other Brazilian studies. Araújo et al. (2002)⁽⁴⁰⁾ showed that in Goiânia-GO, Brazil, the most used AS were Deca Durabolin, Hemogenin and Testosterone with 66%, followed by Equipoise, Anabol and Growth Hormone, with 31% and 3%, respectively. International studies reported the most popular drug with weightlifters in Chicago was Winstrol (Stanozolol)⁽⁴⁵⁾, while Pope et al. (1988)⁽⁴⁶⁾ reported that Dianabol (methandrostenolone) was the most commonly used steroid among the population of college-aged men surveyed.

In our sample, the most used hormones were Durateston (43%), Deposteron and Winstrol (34%) and Decanoate of Nandrolon (25%), as shown in Table 5.

While we found a greater prevalence of Durateston, Silva et al. (2007)⁽³⁸⁾, upon studying anabolic agents in regular resistance trained subjects in the city of Porto Alegre-

RS, found a greater prevalence of Winstrol followed by, Decanoate of Nandrolon and Durateston.

Possibly, the greatest prevalence for Durateston can be explained by the increase of number of falsifications, especially in the state of São Paulo and consequently a greater availability of the drug on “the black market”. In Brazil, the AS are second on a list of counterfeit medications. A study carried out by Ames and Souza (2012)⁽⁴⁷⁾, showed that Durateston made up 8.9% of the seizures made by the Brazilian Federal Police and São Paulo was the second state with the greatest number of seizures (13% de fake medications).

In the present study, the second most consumed AS was Stanozolol (Winstrol). This fact is of extreme importance since this drug is neither produced nor distributed by the laboratories and drugstores of Brazil, which is not any different from the majority of other medications different from the majority of the other medications coming from abroad and found in other national and international studies^(18, 22, 48). And lastly, Decanoate of Nandrolon, with 25% of usage. That can be explained due to the low cost, in addition to its smaller androgynous effect, that is, it inhibits the action of the 5 α -reductase enzyme and consequently, the conversion of the anabolic androgenic steroids for dihydrotestosterone (androgenial action)⁽⁴³⁾ does not occur.

It is well known that RT induces protein synthesis and muscle hypertrophy^(13, 49) and that that positive muscle adaptation, is dependent on time of practice. Deschenes e Kraemer (2002)⁽⁵⁰⁾, suggest that the gains of strength resulting from muscle hypertrophy, take around 12 weeks to be evinced. As of that, we decided to identify RT time of practice of the declared AS users. Table 3 shows that 19.3% of the users practice RT for more than 12 months, and are considered advanced in the training. The same results were described by Silva and Moreau (2003)⁽¹⁸⁾ who found 72% of the advanced users with training above 24 months; Silva et al. (2007)⁽³⁸⁾, reported users with a median RT practice of six years and more recently of Siqueira Nogueira et al. (2014)⁽³⁹⁾ demonstrated that volunteers were trained for more than 4 years (49.5%).

When we identified the objectives of declared AS with RT, beside observing a significant association between training and use (Table 3) we perceived that 22.8% had muscle hypertrophy as a goal, which corroborates with other national studies^(18, 38, 40) and also international ones^(19, 51). That can be explained due to the dissatisfaction with the body, since 74% of the users declared that they would use AS in order to have a more beautiful body, as found by Carreira-Filho (2005)⁽⁵²⁾, who identified a total of 92.93% of young dissatisfied with their muscles.

In the same line of dissatisfaction with the body and search for esthetic results, dietary supplements are very frequent in gymnastic gyms, especially among regular resistance trained subjects. Our results showed a significant association (<0.0001) between the use of AS and dietary supplements (Table 3).

Previous Brazilian studies⁽⁵³⁻⁵⁵⁾ reported the intake of dietary supplements in approximately 30% of individual sports people in gyms, there being cases in which the same person consumed up to six different types. Our data match found those, since the use of dietary supplements also showed high in the young under study.

Besides being considered a risk factor associated with the use, as presented, a large frequency of use of supplements was also found among non users of AS. Out of the declared users, 23.5% declared they are using the supplements and out of the non users, 76.5% were using them. The most cited supplements by AS users were BCAA, Whey Protein and Hypercaloric.

This considerable number of dietary supplement users can be accounted for through the effect of consumption of protein associated with RT, in the inspection, nitrogenate positive. According to Pasiakos (2012)⁽⁵⁶⁾, exercise and amino acids stimulate skeletal muscle protein turnover by modulating the activity of complex intracellular signaling networks, including the mammalian target of complex 1 rapamycin and the mitogen activated protein kinase (MAPK) signaling cascades.

Still from the nutritional point of view, 22.1% of the AS users were on a hypercaloric diet (Table 3) and only 2.6% (based on the sample of 511) of the users were not on a diet to gain or lose weight. Similar data to that of Silva et al. (2007)⁽³⁸⁾ which also found association between nutritional control and AS, with percentile values similar to ours, 17.5% on a hypercaloric diet. It should be underlined that the median age in the present study was 16.9 ± 2.6 years female individuals and 18 ± 2.9 years for male individuals, while Silva et al. (2007)⁽³⁸⁾ was 28.5 ± 10.91 years.

The training of the sport modality for competitive ends was also studied, Brazilian Jiu-Jitsu being the most frequent among the users with 29.4% (Table 4), this modality was also sought out in the last few years by Brazilian young due to the results of fighters in Mixed Martial Arts (MMA) events.

It should be underlined that we do not find a significant association between the practice of competitive modality and the use of AS, found similar to those of Faigenbaum et al. (1998)⁽⁵⁷⁾, which reported a greater use of AS in regular resistance trained subjects in their sample. The same authors declare muscle strength correlate positively with greater percentiles of users observed. It is believed that nearly 30 to 40% of young AS

users, do not participate in a competitive sport, but do take part in RT or other weightlifting activities^(42, 58).

A limiting factor of our study is not having studied the economic resources as a risk factor to the use of AS. Even having been conscious of the level of education of young, we were concerned with the level of their education in order to have a parameter of access to the information; maybe that parameter is not as sensitive as the socioeconomic level, especially because there is not a definition in the literature as far as that question is concerned. The study of⁽⁵⁹⁾ evaluated the reasons for the non-use of illicit drugs among young in a risk situation, and found in its sample 70% of young drug users, who had not yet completed high school and 85% of them declared not having had access to the information regarding the use of drugs in adolescence.

There may be some association between AS use and poor academic performance. In a large national study, DuRant et al. (1995)⁽²⁰⁾ stated that students who reported below-average academic performance had a significantly higher prevalence of AS use than did average or above-average students; however, two studies, reported no relationship between academic achievement and AS use⁽⁶⁰⁻⁶¹⁾.

Reported that affluent students had higher AS use rates than less affluent students. The researchers speculated this was because affluent individuals with greater economic resources would be better able to obtain AS. Also, Handelsman and Gupta (1997)⁽⁶²⁾ have found AS use associated with higher student income. However, another investigation reported that users and non- users did not differ with regards to socioeconomic status and no significant association existed between socioeconomic status and AS use when subjected to more sophisticated statistical analysis.

Finally, a question which is characteristic of the seriousness of the situation is the fact that 64% of the users declared having an easy access to AS without a medical prescription. The goals for the usage of possible recidivous users were: for having a more beautiful body (74%) and to increase their athletic performance (68%). Another important side shown in this study is the relation between the o consumption of AS with the consumption of supplements. This leads to the supposition that there may be chances of young consumers of these products to also consume more AS. Beside that, according to the Schwingel et al. (2014)⁽⁶³⁾ study, some subjects who self-reported use of testosterone or its derivatives, reported alcohol intake, cigarette smoking, and cocaine use.

These findings may help to identify boys and young men at highest risk for AS use, allowing interventions to be targeted more narrowly of this population, leading to more effective prevention of this widespread, but still understudied form of substance abuse.

Practical Applications

Our data show that an important number of young regular resistance trained in the city of Piracicaba-SP, Brazil are users of hormonal agents and other substances with the goal of esthetic improvement. This study supplies subsidies for understanding of a grave public health problem of epidemiological characteristics, and alert to the need of efficient and adequate measures, be it in the health area and/or in directed education to specific population and principally to include a coach as a discloser of enlightening information, since his contact is direct with RT trainees in the sense of changing the profile of the consumption of anabolic androgenic steroids in our society.

Our group believes precocious prevention and intervention programs are of a lower cost as well as more efficacious than effective “treatment” programs. In this way, the need for the improvement of prevention programs – focusing, not only the reasons which led –certain youngsters to try AS, but also the inner motivation which allowed others to refuse the use of “body drugs” should be emphasized.

ACKNOWLEDGEMENTS

We wish to acknowledge CAPES for financing this research, the participants of the committee of specialists who evaluated the instrument of research, the youth volunteers who participated, the parents or guardians of the minors, the resistance training gyms and the coordinators who made the access to the same possible.

REFERENCES

1. Urtado CB, Pereira GB, Urtado MB, de Carvalho EB, Leite Gdos S, Donatto FF, et al. Resistance training associated with the administration of anabolic-androgenic steroids improves insulin sensitivity in ovariectomized rats. *Diabetes Metab Syndr Obes.* 2011;4:385-91.
2. Koch J. Performance-enhancing: substances and their use among adolescent athletes. *Pediatr Rev.* 2002 Sep;23(9):310-7.
3. Tamaki T, Uchiyama S, Uchiyama Y, Akatsuka A, Roy RR, Edgerton VR. Anabolic steroids increase exercise tolerance. *Am J Physiol Endocrinol Metab.* 2001 Jun;280(6):E973-81.
4. Bagchus WM, Smeets JM, Verheul HA, De Jager-Van Der Veen SM, Port A, Geurts TB. Pharmacokinetic evaluation of three different intramuscular doses of nandrolone

- decanoate: analysis of serum and urine samples in healthy men. *J Clin Endocrinol Metab.* 2005 May;90(5):2624-30.
5. Beutel A, Bergamaschi CT, Campos RR. Effects of chronic anabolic steroid treatment on tonic and reflex cardiovascular control in male rats. *J Steroid Biochem Mol Biol.* 2005 Jan;93(1):43-8.
 6. Eliakim A, Cale-Benzoor M, Klinger-Cantor B, Freud E, Nemet D, Feigin E, et al. A case study of virilizing adrenal tumor in an adolescent female elite tennis player--insight into the use of anabolic steroids in young athletes. *J Strength Cond Res.* 2011 Jan;25(1):46-50.
 7. Breuer ME, McGinnis MY, Lumia AR, Possidente BP. Aggression in male rats receiving anabolic androgenic steroids: effects of social and environmental provocation. *Horm Behav.* 2001 Nov;40(3):409-18.
 8. Mottram D, George A. *Anabolic Steroids.* Baillière. Baillière Clin Endocrinol and Metabol. 2000;14(1):55-69.
 9. Korkia P, Stimson GV. Indications of prevalence, practice and effects of anabolic steroid use in Great Britain. *Int J Sports Med.* 1997 Oct;18(7):557-62.
 10. Lambert MI, Titlestad SD, Schwellnus MP. Prevalence of androgenic-anabolic steroid use in adolescents in two regions of South Africa. *S Afr Med J.* 1998 Jul;88(7):876-80.
 11. Maharaj VR, Dookie T, Mohammed S, Ince S, Marsang BL, Rambocas N, et al. Knowledge, attitudes and practices of anabolic steroid usage among gym users in Trinidad. *West Indian Med J.* 2000 Mar;49(1):55-8.
 12. Yesalis CE, Bahrke MS. Doping among adolescent athletes. *Baillieres Best Pract Res Clin Endocrinol Metab.* 2000 Mar;14(1):25-35.
 13. Garber C, Blissmer B, Deschenes M, Franklin B, Lamonte M, Lee I, et al. American College of Sports Medicine. American College of Sports Medicine position stand. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Med Sci Sports Exerc.* 2011 Jul;43(7):1334-59.
 14. Kraemer W, Adams K, Cafarelli E, Dudley G, Dooly C, Feigenbaum M, et al. American College of Sports Medicine position stand. Progression models in resistance training for healthy adults. *Med Sci Sports Exerc.* 2002;34(2):364-80

15. Lloyd RS, Faigenbaum AD, Stone MH, Oliver JL, Jeffreys I, Moody JA, et al. Position statement on youth resistance training: the 2014 International Consensus. *Br J Sports Med.* 2014 Apr;48(7):498-505.
16. Behringer M, Vom Heede A, Yue Z, Mester J. Effects of resistance training in children and adolescents: a meta-analysis. *Pediatrics.* 2010;126(5):e1199-210.
17. Blimkie CJR, Bar-Or O. Muscle Strength, Endurance, and Power: Trainability During Childhood. *The Young Athlete: Blackwell Publishing Ltd;* 2008. p. 65-83.
18. Silva I, Moreau R. Uso de esteróides anabólicos androgênicos por praticantes de musculação de grandes academias da cidade de São Paulo. *Rev Bras Ciênc Farm.* 2003;39(3):327-33.
19. Bahrke MS, Yesalis CE, Kopstein AN, Stephens JA. Risk factors associated with anabolic-androgenic steroid use among adolescents. *Sports Med.* 2000 Jun;29(6):397-405.
20. DuRant RH, Escobedo LG, Heath GW. Anabolic-steroid use, strength training, and multiple drug use among adolescents in the United States. *Pediatrics.* 1995 Jul;96(1 Pt 1):23-8.
21. Radakovich J, Broderick P, Pickell G. Rate of anabolic-androgenic steroid use among students in junior high school. *J Am Board Fam Pract.* 1993 Jul-Aug;6(4):341-5.
22. Bahrke MS, Yesalis CE, Brower KJ. Anabolic-androgenic steroid abuse and performance-enhancing drugs among adolescents. *Child Adolesc Psychiatr Clin N Am.* 1998 Oct;7(4):821-38.
23. Johnston L, O'malley P, Bachman J. Monitoring the future national results on adolescent drug use: Overview of Key findings, 2001. (NHI Publication no. 02-2105) Bethesda, M.D: National Institute on Drug Abuse; 2002.
24. Melia P, Pipe A, Greenberg L. The use of anabolic-androgenic steroids by Canadian students. *Clin J Sport Med.* 1996 Jan;6(1):9-14.
25. Whitehead R, Chillag S, Elliott D. Anabolic steroid use among adolescents in a rural state. *J Fam Pract.* 1992 Oct;35(4):401-5.
26. Kindlundh AM, Isacson DG, Berglund L, Nyberg F. Factors associated with adolescent use of doping agents: anabolic-androgenic steroids. *Addiction.* 1999 Apr;94(4):543-53.

27. Urtado C. Prevalência e perfil da utilização de esteróides anabolizantes por praticantes de treinamento de força com idade entre 14 e 24 anos na cidade de Piracicaba, São Paulo, Brasil [Doutorado]. Campinas: Universidade Estadual de Campinas; 2014.
28. Yesalis CE, Barsukiewicz CK, Kopstein AN, Bahrke MS. Trends in anabolic-androgenic steroid use among adolescents. *Arch Pediatr Adolesc Med*. 1997 Dec;151(12):1197-206.
29. Fisher G, Roget N. Encyclopedia of substance abuse prevention, treatment, and recovery. Thousand Oaks, CA: SAGE Publications; 2009.
30. Leifman H, Rehnman C, Sjoblom E, Holgersson S. Anabolic androgenic steroids--use and correlates among gym users--an assessment study using questionnaires and observations at gyms in the Stockholm region. *Int J Environ Res Public Health*. 2011;8(7):2656-74.
31. Molobe I. Knowledge, attitude and practice on drug abuse among sports men and women in Lagos State, Nigeria. *International Journal of Medicine and Medical Sciences*. 2012;2(3):77-85.
32. Sepehri G, Moosavifar M. The frequency of anabolic steroid abuse in bodybuilder athletes in Kerman City. *J Rafsanjan Univ Med Sci*. 2003;2(3):213-21 [In Persian].
33. Nutter J. Middle School Students' Attitudes and Use of Anabolic Steroids. *The Journal of Strength & Conditioning Research*. 1997;11(1):35-9.
34. Street C, Antonio J. Steroids From Mexico: Educating the Strength and Conditioning Community. *Journal of Strength and Conditioning Research*. 2000;14(3):289-94.
35. Mattila V, Rimpelä A, Jormanainen V, Sahi T, Pihlajamäki H. Anabolic-androgenic steroid use among young Finnish males. *Scand J Med Sci Sports*. 2010;20(2):330-5.
36. Silva LSMF, Moreau RLdM. Uso de esteróides anabólicos androgênicos por praticantes de musculação de grandes academias da cidade de São Paulo. *Revista Brasileira de Ciências Farmacêuticas*. 2003;39(3):327-33.
37. Santos AM, da Rocha MS, da Silva MF. Illicit use and abuse of anabolic-androgenic steroids among Brazilian bodybuilders. *Subst Use Misuse*. 2011;46(6):742-8.

38. Silva PRPd, Machado Júnior LC, Figueiredo VC, Cioffi AP, Prestes MC, Czepielewski MA. Prevalência do uso de agentes anabólicos em praticantes de musculação de Porto Alegre. *Arquivos Brasileiros de Endocrinologia & Metabologia*. 2007;51(1):104-10.
39. de Siqueira Nogueira F, de Freitas BA, de Oliveira C, Vieira T, Beniz Gouveia R. Anabolic-Androgenic Steroid Use Among Brazilian Bodybuilders. *Subst Use Misuse*. 2014.
40. Araújo L, Andreolo J, Silva M. Utilização de suplemento alimentar e anabolizante por praticantes de musculação nas academias de Goiânia-GO. *Rev Bras Ciên Movim*. 2002;10(3):13-8.
41. Yesalis C. Epidemiology and patterns of anabolic-androgenic steroid use. *Psychiatric Annals*. 1992;22:7-18.
42. Buckley WE, Yesalis CE, 3rd, Friedl KE, Anderson WA, Streit AL, Wright JE. Estimated prevalence of anabolic steroid use among male high school seniors. *JAMA*. 1988 Dec 16;260(23):3441-5.
43. Hartgens F, Kuipers H. Effects of androgenic-anabolic steroids in athletes. *Sports Med*. 2004;34(8):513-54.
44. Wilson J. Androgens. In: Gilman A, Rall T, Nies A, Taylor P, editors. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*. 9th ed. Singapore: McGraw-Hill Book Co; 1996. p. 1441-57.
45. Frankle M, GJ C, Payne J. Use of androgenic anabolic steroids by athletes. *JAMA*. 1984;252:482.
46. Pope H, Katz D, Champoux R. Anabolic-androgenic steroid use among 1,010 college men. *Phys Sports Med*. 1988;16:75-82.
47. Ames J, Souza DZ. Falsificação de medicamentos no Brasil. *Revista de Saúde Pública*. 2012;46:154-9.
48. National Institute on Drug Abuse. 2014 [25 mai 2014]; Available from: <http://www.nida.nih.gov>.
49. Wernbom M, Augustsson J, Thomee R. The influence of frequency, intensity, volume and mode of strength training on whole muscle cross-sectional area in humans. *Sports Med*. 2007;37(3):225-64.

50. Kraemer WJ, Ratamess NA. Fundamentals of resistance training: progression and exercise prescription. *Med Sci Sports Exerc.* 2004 Apr;36(4):674-88.
51. Pope HG, Jr., Kanayama G, Hudson JI. Risk factors for illicit anabolic-androgenic steroid use in male weightlifters: a cross-sectional cohort study. *Biol Psychiatry.* 2012 Feb 1;71(3):254-61.
52. Carreira Filho D. Prevalência do uso de substâncias químicas com objetivo de modelagem corporal entre adolescentes de 14 a 18 anos, de ambos os sexos, do município de São Caetano do Sul, São Paulo, Brasil, 2003 [Doutorado]. Campinas: Universidade Estadual de Campinas; 2005.
53. Araújo A, Soares Y. Perfil de utilização de repositores protéicos nas academias de Belém, Pará. *Revista de Nutrição da PUCCAMP.* 1999;12(1):81-9.
54. Rocha L, Pereira M. Consumo de suplementos nutricionais por praticantes de exercícios físicos em academias. *Revista de Nutrição da PUCCAMP.* 1998;11(1):76-82.
55. Sousa A. Nutrição e hábitos alimentares de atletas praticantes de musculação em uma academia da cidade de Fortaleza, CE. *Revista de Nutrição PUCCAMP.* 1993;6(2):184-203.
56. Pasiakos S. Exercise and amino acid anabolic cell signaling and the regulation of skeletal muscle mass. *Nutrients.* 2012;4(7):740-58.
57. Faigenbaum A, Zaichkowsky L, Gardner D, LJ M. Anabolic steroid use by male and female middle school students. *Pediatrics.* 1998;101(5):6.
58. DuRant RH, Rickert VI, Ashworth CS, Newman C, Slavens G. Use of multiple drugs among adolescents who use anabolic steroids. *N Engl J Med.* 1993 Apr 1;328(13):922-6.
59. Sanchez Z, de Oliveira L, Nappo S. Razões para o não-uso de drogas ilícitas entre jovens em situação de risco. *Rev Saúde Pública.* 2005;39(4):599-605.
60. Adalf E, Smart R. Characteristics of steroid users in an adolescent school population. *J Alcohol Drug Educ* 1992. 1992;38(1):43-9.
61. DuRant R, Middleman A, Faulkner A, Jean Emans S, Woods E. Adolescent anabolic-steroid use, multiple drug use, and high school sports participation. *Pediatr Exerc Sci.* 1997;9:150-8.

62. Handelsman D, Gupta L. Prevalence and risk factors for anabolic-androgenic steroid abuse in Australian high school students. *Int J Androl.* 1997;20(3):159-64.
63. Schwingel PA, Zoppi CC, Cotrim HP. The Influence of Concomitant Use of Alcohol, Tobacco, Cocaine, and Anabolic Steroids on Lipid Profiles of Brazilian Recreational Bodybuilders. *Subst Use Misuse.* 2014 Apr 28.

TABLE 1. Distribution of Sample regarding gender

	14 to 19 years	20 to 24 years
Male	197 (38.7%)	79 (15.4%)
Female	198 (38.9%)	37 (7.2%)
Total	395 (77.3%)	116 (22.7%)

TABLE 2. Use of AS according to demographic variables

Variables	Yes (%)	No (%)	χ^2	p-value
Male	41(15 %)	233 (85%)	23.11	<0.0001
Female	6 (2.6%)	228 (97.4%)		
Age			17.84	<0.0001
14 to 19 years	25 (6.3%)	371 (93.7%)		
20 to 24 years	22 (19.3%)	92 (80.7%)		
Education			2.22	0.33
Up to 8 th Grade	2 (8.7%)	21 (91.3%)		
High School	33 (8.3%)	364 (91.7%)		
Higher Education	12 (13.3%)	78 (83.7%)		
Mother's Education			3.2	0.52
Up to 8 th Grade	11 (12.9%)	74 (87.1%)		
High School	19 (9.5%)	182 (90.5%)		
Higher Education	15 (8.6%)	159 (91.4%)		
Graduate Education	1 (3.0%)	32 (97%)		
Father's Education			2.29	0.68
Up to 8 th Grade	8 (10.8%)	66 (89.2%)		
High School	20 (11.2%)	159 (88.8%)		
Higher Education	13 (7.0%)	172 (93%)		
Graduate Education	4 (9.3%)	39 (90.7%)		

TABLE 3. Use of EAA according to risk factors

Variables	Yes (%)	No (%)	χ^2	p-value
Time of Practice of RT (months)				
< 3	2 (2.0%)	99 (98%)	36.56	<0.0001
3 a 6	4 (2.6%)	15 (97.4%)		
6 a 12	6 (8.2%)	67 (91,8%)		
> 12	35 (19.3%)	146 (80.7%)		
Daily length of RT time (min.)				
<30'	0 (0%)	12 (100%)	4.16	0.38
30 a 60'	16 (9.8%)	147 (90.2%)		
60 a 90'	17 (8.2%)	191 (91.8%)		
90 a 120'	13 (13%)	87 (87%)		
> 120'	1 (3.8%)	25 (96.2%)		
Practice of Sports Modality			2.37	0.50
No, I never trained.	17 (9.3%)	166 (90.7%)		
Yes, I <i>have trained</i>	17 (7.6%)	206 (92.4%)		
Yes, I still train	11 (12.1%)	80 (87.9%)		
No, but I intend to train	2 (16.7%)	10 (83.3)		
Goals with RT			48.81	<0.0001
Muscle Hypertrophy	33 (22.8%)	112 (77.2%)		
Weight Loss	3 (2.9%)	102 (97.1%)		
Muscle definition	10 (4.6%)	208 (95.4%)		
Health	1 (2.6%)	38 (97.4%)		
Use of Dietary Supplements			64.87	<0.0001
Yes, I am using	35 (23.5%)	114 (76.5%)		
Yes, but I stopped use	11 (14.1%)	67 (85.9%)		
No, I never used	1 (0.4%)	233 (99.6%)		
Nutritional Control			28.86	<0.0001
For weight loss	9 (6.4%)	131 (93.6%)		
For weight gain	25 (22.1%)	88 (77.9%)		
No	13 (5.1%)	242 (94.9%)		

TABLE 4. Percentage of adolescents by Activity Involvement Who Reported Having Used AS

Sports	Frequency	User Frequency (%)
Soccer	66	8 (12.1%)
Volleyball	38	1 (2.6%)
Basketball	27	2 (7.4%)
Swimming	54	1 (1.6%)
Karate	8	0 (0%)
Brazilian Jiu-Jitsu	17	5 (29.4%)
Track and field	5	0 (0%)
Handball	38	1 (2.6%)
Dance	5	0 (0%)

TABLE 5. Percentage of Anabolic Steroid Users and Nonusers according to the type of hormone

Substances Used	Users(%) (n=47)
Nandrolone Decanoate(Deca-Durabolin®)	14 (26%)
Stanozolol (Winstrol™)	16 (34%)
Testosterone Cypionate (Deposteron®)	16 (34%)
Propionate, Phenilpropionate, Isocaproate and Decanoate of Testosterone (Durateston®)	20 (43%)
Oxandrolon (Anavar™)	8 (17%)
Oxymetholon (Hemogenin®)	10 (21%)
Metandrostenolone (Dianabol®)	3 (6%)
Undecanoate of boldenon (Equipoise™)	2 (4%)

TABLE 6. Percentage of Anabolic Steroid Users according to the use of dietary supplements

Supplements Used	Users(%) (n=47)
Whey Protein	7 (15%)
BCAA	8 (17%)
Albumin	6 (13%)
Maltodextrine	6 (13%)
Creatine	6 (13%)
Hypercaloric	7 (15%)
Dextrose	1 (2%)
Glutamine	3 (6%)
Thermogenic	4 (9%)

TABLE 7. Percentage of Anabolic Steroid Users and Nonusers Who Answered Positively to Questions Relating to Their Attitudes and Perceptions Toward AS

Sports	Users(%) (n=47)	Non User (%) (n=458)
Ease of Access to anabolic steroids without a prescription	30 (64%)	362 (79%)
Do you know any undesirable effect of AS?	25 (53%)	216 (47%)
Would you use AS to have a more beautiful body?	35 (74%)	53 (11.5%)
Would you use in order to increase your athletic performance?	32 (68%)	40 (9%)

3. CONCLUSÃO

Nossos dados demonstram que o instrumento desenvolvido para a pesquisa foi válido e reprodutível e sugerem que há um número importante de jovens praticantes de treinamento de força na cidade de Piracicaba-SP usuários de hormônios e outras substâncias, sendo considerado um problema de saúde pública e que merece atenção e conduta especial dos profissionais envolvidos na saúde do adolescente.

4. REFERÊNCIAS BIBLIOGRÁFICAS

1. Sagoe D, Molde H, Andreassen CS, Torsheim T, Pallesen S. The global epidemiology of anabolic-androgenic steroid use: a meta-analysis and meta-regression analysis. *Ann Epidemiol*. 2014;24(5):383-98.
2. Urtado CB, Pereira GB, Urtado MB, de Carvalho EB, Leite Gdos S, FF D. Resistance training associated with the administration of anabolic-androgenic steroids improves insulin sensitivity in ovariectomized rats. *Diabetes Metab Syndr Obes*. 2011;4:385-91.
3. Kanayama G, Hudson JI, Pope HG Jr. Illicit anabolic-androgenic steroid use. *Horm Behav*. 2010;58(1):111-21.
4. Mooradian AD MJ, Korenman SG. . Biological actions of androgens. *Endocr Rev* 1987;8(1):1-28.
5. Kohler R, M. L. Urine nandrolone metabolites: false positive doping test? *J Sports Med*. 2002;36(5):325-29.
6. Tamaki T, Uchiyama S, Uchiyama Y, Akatsuka A, Roy RR, VR E. Anabolic steroids increase exercise tolerance. *Am J Physiol Endocrinol Metab*. 2001;280(6):E973-81.
7. Regozkin V. Metabolic effects of anabolic steroid on skeletal muscle. *Med Sci Sports*. 1979;11(2):160-3.
8. Hickson RC CS, Falduto MT, Young AP. Glucocorticoid antagonism by exercise and androgenic-anabolic steroids. *Med Sci Sports Exerc*. 1990;22(3):331-40.

9. Tamaki T, Shiraishi T, Takeda H, Matsumiya T, Roy RR, VR E. Nandrolone decanoate enhances hypothalamic biogenic amines in rats. *Med Sci Sports Exerc.* 2003;35(1):32-8.
10. Strawford A, Barbieri T, Neese R, Van Loan M, Christiansen M, R H. Effects of nandrolone decanoate therapy in borderline hypogonadal men with HIV-associated weight loss. *J Acquir Immune Defic Syndr Hum Retrovirol.* 1999;20(2):137-46.
11. Sattler FR, Jaque SV, Schroeder ET, Olson C, Dube MP, Martinez C, et al. Effects of pharmacological doses of nandrolone decanoate and progressive resistance training in immunodeficient patients infected with human immunodeficiency virus. *The Journal of clinical endocrinology and metabolism.* 1999;84(4):1268-76.
12. Scott DM, Wagner JC, Barlow TW. Anabolic steroid use among adolescents in Nebraska schools. *American journal of health-system pharmacy : AJHP : official journal of the American Society of Health-System Pharmacists.* 1996;53(17):2068-72. Epub 1996/09/01.
13. Olweus D, Mattsson A, Schalling D, Low H. Testosterone, aggression, physical, and personality dimensions in normal adolescent males. *Psychosomatic medicine.* 1980;42(2):253-69. Epub 1980/03/01.
14. Galligani N, Renck A, Hansen S. Personality profile of men using anabolic androgenic steroids. *Horm Behav.* 1996;30(2):170-5. Epub 1996/06/01.
15. Choi PY, Pope HG, Jr. Violence toward women and illicit androgenic-anabolic steroid use. *Annals of clinical psychiatry : official journal of the American Academy of Clinical Psychiatrists.* 1994;6(1):21-5. Epub 1994/03/01.
16. Pope HG, Jr., Katz DL. Homicide and near-homicide by anabolic steroid users. *The Journal of clinical psychiatry.* 1990;51(1):28-31. Epub 1990/01/01.

17. Bakker J, Honda S, Harada N, Balthazart J. The aromatase knockout (ArKO) mouse provides new evidence that estrogens are required for the development of the female brain. *Annals of the New York Academy of Sciences*. 2003;1007:251-62. Epub 2004/03/03.
18. Keenan BS, Richards GE, Ponder SW, Dallas JS, Nagamani M, Smith ER. Androgen-stimulated pubertal growth: the effects of testosterone and dihydrotestosterone on growth hormone and insulin-like growth factor-I in the treatment of short stature and delayed puberty. *The Journal of clinical endocrinology and metabolism*. 1993;76(4):996-1001. Epub 1993/04/01.
19. Kerrigan JR, Rogol AD. The impact of gonadal steroid hormone action on growth hormone secretion during childhood and adolescence. *Endocrine reviews*. 1992;13(2):281-98. Epub 1992/05/01.
20. McCarthy MM. Estradiol and the developing brain. *Physiological reviews*. 2008;88(1):91-124. Epub 2008/01/16.
21. Morris J, Jordan C, S B. Sexual differentiation of the vertebrate nervous system. *Nat Neurosci*. 2004;7(10):1034-9.
22. Romeo RD, Richardson HN, Sisk CL. Puberty and the maturation of the male brain and sexual behavior: recasting a behavioral potential. *Neuroscience and biobehavioral reviews*. 2002;26(3):381-91. Epub 2002/05/30.
23. Sisk CL, Schulz KM, Zehr JL. Puberty: a finishing school for male social behavior. *Annals of the New York Academy of Sciences*. 2003;1007:189-98. Epub 2004/03/03.
24. Zehr JL, Nichols LR, Schulz KM, Sisk CL. Adolescent development of neuron structure in dentate gyrus granule cells of male Syrian hamsters. *Developmental neurobiology*. 2008;68(14):1517-26. Epub 2008/09/16.

25. Schulz K, Zehr J, Salas-Ramirez K, C S. Testosterone programs adult social behavior before and during, but not after, adolescence. *Endocrinology*. 2009;150(8):3690-8.
26. Bitran D, Kellogg CK, Hilvers RJ. Treatment with an anabolic-androgenic steroid affects anxiety-related behavior and alters the sensitivity of cortical GABAA receptors in the rat. *Horm Behav*. 1993;27(4):568-83. Epub 1993/12/01.
27. Kanayama G, Hudson JI, Pope HG, Jr. Long-term psychiatric and medical consequences of anabolic-androgenic steroid abuse: a looming public health concern? *Drug and alcohol dependence*. 2008;98(1-2):1-12. Epub 2008/07/05.
28. Trenton AJ, Currier GW. Behavioural manifestations of anabolic steroid use. *CNS drugs*. 2005;19(7):571-95. Epub 2005/06/30.
29. Hall RC, Chapman MJ. Psychiatric complications of anabolic steroid abuse. *Psychosomatics*. 2005;46(4):285-90. Epub 2005/07/08.
30. Thiblin I, Petersson A. Pharmacoepidemiology of anabolic androgenic steroids: a review. *Fundamental & clinical pharmacology*. 2005;19(1):27-44. Epub 2005/01/22.
31. Pagonis TA, Angelopoulos NV, Koukoulis GN, Hadjichristodoulou CS. Psychiatric side effects induced by supraphysiological doses of combinations of anabolic steroids correlate to the severity of abuse. *European psychiatry : the journal of the Association of European Psychiatrists*. 2006;21(8):551-62. Epub 2005/12/17.
32. Bagchus WM, Smeets JM, Verheul HA, De Jager-Van Der Veen SM, Port A, Geurts TB. Pharmacokinetic evaluation of three different intramuscular doses of nandrolone decanoate: analysis of serum and urine samples in healthy men. *The Journal of clinical endocrinology and metabolism*. 2005;90(5):2624-30. Epub 2005/02/17.

33. Beutel A, Bergamaschi CT, Campos RR. Effects of chronic anabolic steroid treatment on tonic and reflex cardiovascular control in male rats. *The Journal of steroid biochemistry and molecular biology*. 2005;93(1):43-8. Epub 2005/03/08.
34. Breuer ME, McGinnis MY, Lumia AR, Possidente BP. Aggression in male rats receiving anabolic androgenic steroids: effects of social and environmental provocation. *Horm Behav*. 2001;40(3):409-18. Epub 2001/10/25.
35. Mottram D, George A. *Anabolic Steroids*. Baillière. Baillière Clin Endocrinol and Metabol. 2000;14(55-69):55-69.
36. Darke S, Torok M, Duflou J. Sudden or unnatural deaths involving anabolic-androgenic steroids. *Journal of forensic sciences*. 2014;59(4):1025-8. Epub 2014/03/13.
37. Shamloul RM, Aborayah AF, Hashad A, Abd-Allah F. Anabolic steroids abuse-induced cardiomyopathy and ischaemic stroke in a young male patient. *BMJ Case Reports*. 2014;26.
38. Montisci M, El Mazloum R, Cecchetto G, Terranova C, Ferrara SD, Thiene G, et al. Anabolic androgenic steroids abuse and cardiac death in athletes: morphological and toxicological findings in four fatal cases. *Forensic science international*. 2012;217(1-3):e13-8. Epub 2011/11/04.
39. D'Andrea A, Caso P, Salerno G, Scarafile R, De Corato G, Mita C, et al. Left ventricular early myocardial dysfunction after chronic misuse of anabolic androgenic steroids: a Doppler myocardial and strain imaging analysis. *British journal of sports medicine*. 2007;41(3):149-55. Epub 2006/12/21.
40. Baggish AL, Weiner RB, Kanayama G, Hudson JI, Picard MH, Hutter AM, Jr., et al. Long-term anabolic-androgenic steroid use is associated with left ventricular dysfunction. *Circulation Heart failure*. 2010;3(4):472-6. Epub 2010/04/29.

41. Kasikcioglu E, Oflaz H, Umman B, Bugra Z. Androgenic anabolic steroids also impair right ventricular function. *International journal of cardiology*. 2009;134(1):123-5. Epub 2008/02/15.
42. Luijkx T, Velthuis BK, Backx FJ, Buckens CF, Prakken NH, Rienks R, et al. Anabolic androgenic steroid use is associated with ventricular dysfunction on cardiac MRI in strength trained athletes. *International journal of cardiology*. 2013;167(3):664-8. Epub 2012/03/31.
43. Higgins JP, Heshmat A, Higgins CL. Androgen abuse and increased cardiac risk. *Southern medical journal*. 2012;105(12):670-4. Epub 2012/12/06.
44. Hartgens F, Kuipers H. Effects of androgenic-anabolic steroids in athletes. *Sports medicine (Auckland, NZ)*. 2004;34(8):513-54. Epub 2004/07/14.
45. Kouri EM, Pope HG, Jr., Oliva PS. Changes in lipoprotein-lipid levels in normal men following administration of increasing doses of testosterone cypionate. *Clinical journal of sport medicine : official journal of the Canadian Academy of Sport Medicine*. 1996;6(3):152-7. Epub 1996/07/01.
46. Martin SS, Blaha MJ, Blankstein R, Agatston A, Rivera JJ, Virani SS, et al. Dyslipidemia, coronary artery calcium, and incident atherosclerotic cardiovascular disease: implications for statin therapy from the multi-ethnic study of atherosclerosis. *Circulation*. 2014;129(1):77-86. Epub 2013/10/22.
47. Martin SS, Metkus TS, Horne A, Blaha MJ, Hasan R, Campbell CY, et al. Waiting for the National Cholesterol Education Program Adult Treatment Panel IV Guidelines, and in the meantime, some challenges and recommendations. *The American journal of cardiology*. 2012;110(2):307-13. Epub 2012/04/14.
48. Vanberg P, Atar D. Androgenic anabolic steroid abuse and the cardiovascular system. *Handbook of experimental pharmacology*. 2010(195):411-57. Epub 2009/12/19.

49. Grundy SM, Cleeman JI, Merz CN, Brewer HB, Jr., Clark LT, Hunninghake DB, et al. Implications of recent clinical trials for the National Cholesterol Education Program Adult Treatment Panel III guidelines. *Circulation*. 2004;110(2):227-39. Epub 2004/07/14.
50. Santora LJ, Marin J, Vangrow J, Minegar C, Robinson M, Mora J, et al. Coronary calcification in body builders using anabolic steroids. *Preventive cardiology*. 2006;9(4):198-201. Epub 2006/11/07.
51. Parssinen M, Seppala T. Steroid use and long-term health risks in former athletes. *Sports medicine (Auckland, NZ)*. 2002;32(2):83-94. Epub 2002/01/31.
52. Severo C, Ribeiro J, Umpierre D, Da Silveira A, Padilha M, De Aquino Neto F. Increased atherothrombotic markers and endothelial dysfunction in steroid users. *Eur J Prev Cardiol*. 2013;20(2):195-201.
53. Maharaj VR, Dookie T, Mohammed S, Ince S, Marsang BL, Rambocas N, et al. Knowledge, attitudes and practices of anabolic steroid usage among gym users in Trinidad. *The West Indian medical journal*. 2000;49(1):55-8. Epub 2000/04/29.
54. Yesalis CE, Bahrke MS. Doping among adolescent athletes. *Bailliere's best practice & research Clinical endocrinology & metabolism*. 2000;14(1):25-35. Epub 2000/08/10.
55. Lambert MI, Titlestad SD, Schwellnus MP. Prevalence of androgenic-anabolic steroid use in adolescents in two regions of South Africa. *South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde*. 1998;88(7):876-80. Epub 1998/08/12.
56. Evans NA. Gym and tonic: a profile of 100 male steroid users. *British journal of sports medicine*. 1997;31(1):54-8.

57. Korkia P, Stimson GV. Indications of prevalence, practice and effects of anabolic steroid use in Great Britain. *International journal of sports medicine*. 1997;18(7):557-62. Epub 1997/12/31.
58. Perry HM, Wright D, Littlepage BN. Dying to be big: a review of anabolic steroid use. *British journal of sports medicine*. 1992;26(4):259-61.
59. Lindstrom M, Nilsson AL, Katzman PL, Janzon L, Dymling JF. Use of anabolic-androgenic steroids among body builders--frequency and attitudes. *Journal of internal medicine*. 1990;227(6):407-11. Epub 1990/06/01.
60. Carreira Filho D. Carreira Filho D. Prevalência do uso de substâncias químicas com objetivo de modelagem corporal entre adolescentes de 14 a 18 anos, de ambos os sexos, do município de São Caetano do Sul, São Paulo, Brasil [Doutorado]. Campinas: Universidade Estadual de Campinas; 2005.
61. Kemp K. *Corpo modificado, corpo livre?* . São Paulo: Paulus; 2005.
62. Bourdieu P. Remarques provisoires sur la perception sociale du corps. *Actes Rech Sci Soc*. 1977;14(14):51-4.
63. Iriart JA, Chaves JC, Orleans RG. Body cult and use of anabolic steroids by bodybuilders. *Cadernos de saude publica*. 2009;25(4):773-82.
64. Silva I, Moreau R. Uso de esteróides anabólicos androgênicos por praticantes de musculação de grandes academias da cidade de São Paulo. *Rev Bras Ciênc Farm*. 2003;39(3):327-33.
65. Silva PRPD, Machado Júnior LC, Figueiredo VC, Cioffi AP, Prestes MC, Czepielewski MA. Prevalência do uso de agentes anabólicos em praticantes de musculação de Porto Alegre. *Arquivos Brasileiros de Endocrinologia & Metabologia*. 2007;51(1):104-10.

66. Blouin AG, Goldfield GS. Body image and steroid use in male bodybuilders. *The International journal of eating disorders*. 1995;18(2):159-65. Epub 1995/09/01.
67. Martins Filho J. Quem Cuidará das Crianças? - A Difícil Tarefa de Educar os Filhos Hoje. 1 ed. São Paulo: Editora Papirus; 2011.
68. American College of Sports Medicine position stand. Progression models in resistance training for healthy adults. *Med Sci Sports Exerc*. 2009;41(3):687-708. Epub 2009/02/11.
69. Kraemer WJ, Adams K, Cafarelli E, Dudley GA, Dooly C, Feigenbaum MS, et al. American College of Sports Medicine position stand. Progression models in resistance training for healthy adults. *Med Sci Sports Exerc*. 2002;34(2):364-80. Epub 2002/02/06.
70. Garber CE, Blissmer B, Deschenes MR, Franklin BA, Lamonte MJ, Lee IM, et al. American College of Sports Medicine position stand. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Med Sci Sports Exerc*. 2011;43(7):1334-59. Epub 2011/06/23.
71. Lloyd RS, Faigenbaum AD, Stone MH, Oliver JL, Jeffreys I, Moody JA, et al. Position statement on youth resistance training: the 2014 International Consensus. *British journal of sports medicine*. 2014;48(7):498-505. Epub 2013/09/24.
72. Behringer M, Vom Heede A, Yue Z, Mester J. Effects of resistance training in children and adolescents: a meta-analysis. *Pediatrics*. 2010;126(5):e1199-210.
73. Koch JJ. Performance-enhancing: substances and their use among adolescent athletes. *Pediatrics in review / American Academy of Pediatrics*. 2002;23(9):310-7. Epub 2002/09/03.

74. Bahrke MS, Yesalis CE, Kopstein AN, Stephens JA. Risk factors associated with anabolic-androgenic steroid use among adolescents. *Sports medicine* (Auckland, NZ). 2000;29(6):397-405. Epub 2000/06/28.
75. DuRant RH, Escobedo LG, Heath GW. Anabolic-steroid use, strength training, and multiple drug use among adolescents in the United States. *Pediatrics*. 1995;96(1 Pt 1):23-8. Epub 1995/07/01.
76. National Strength and Conditioning Association. Position paper on prepubescent strength training. *NSCA J*. 1985;7:27–31.
77. Chaouachi A, Hammami R, Kaabi S, Chamari K, Drinkwater EJ, Behm DG. Olympic weightlifting and plyometric training with children provides similar or greater performance improvements than traditional resistance training. *Journal of strength and conditioning research / National Strength & Conditioning Association*. 2014;28(6):1483-96. Epub 2013/11/01.
78. Schranz N, Tomkinson G, Olds T. What is the effect of resistance training on the strength, body composition and psychosocial status of overweight and obese children and adolescents? A Systematic review and meta-analysis. *Sports medicine* (Auckland, NZ). 2013;43(9):893-907. Epub 2013/06/05.
79. Faigenbaum AD, Kraemer WJ, Blimkie CJ, Jeffreys I, Micheli LJ, Nitka M, et al. Youth resistance training: updated position statement paper from the national strength and conditioning association. *Journal of strength and conditioning research / National Strength & Conditioning Association*. 2009;23(5 Suppl):S60-79. Epub 2009/07/22.
80. American College of Sports Medicine - ACSM's. *Guidelines for Exercise Testing and Prescription*. 9 ed. Philadelphia, PA: Lippincott Williams and Wilkins; 2014.
81. Schwingshandl J, Sudi K, Eibl B, Wallner S, Borkenstein M. Effect of an individualised training programme during weight reduction on body

- composition: a randomised trial. Archives of Disease in Childhood. 1999;81(5):426-8.
82. Benson AC, Torode ME, Fiatarone Singh MA. The effect of high-intensity progressive resistance training on adiposity in children: a randomized controlled trial. International journal of obesity (2005). 2008;32(6):1016-27. Epub 2008/02/20.
 83. Watts K, Beye P, Siafarikas A, Davis EA, Jones TW, O'Driscoll G, et al. Exercise training normalizes vascular dysfunction and improves central adiposity in obese adolescents. Journal of the American College of Cardiology. 2004;43(10):1823-7. Epub 2004/05/18.
 84. Shaibi GQ, Cruz ML, Ball GD, Weigensberg MJ, Salem GJ, Crespo NC, et al. Effects of resistance training on insulin sensitivity in overweight Latino adolescent males. Med Sci Sports Exerc. 2006;38(7):1208-15. Epub 2006/07/11.
 85. Naylor LH, Watts K, Sharpe JA, Jones TW, Davis EA, Thompson A, et al. Resistance training and diastolic myocardial tissue velocities in obese children. Med Sci Sports Exerc. 2008;40(12):2027-32. Epub 2008/11/05.
 86. Alvarez-San Emeterio C, Antunano NP, Lopez-Sobaler AM, Gonzalez-Badillo JJ. Effect of strength training and the practice of Alpine skiing on bone mass density, growth, body composition, and the strength and power of the legs of adolescent skiers. Journal of strength and conditioning research / National Strength & Conditioning Association. 2011;25(10):2879-90. Epub 2011/08/30.
 87. Bass SL. The prepubertal years: a uniquely opportune stage of growth when the skeleton is most responsive to exercise? Sports medicine (Auckland, NZ). 2000;30(2):73-8. Epub 2000/08/31.
 88. Myer GD, Faigenbaum AD, Chu DA, Falkel J, Ford KR, Best TM, et al. Integrative training for children and adolescents: techniques and practices for

reducing sports-related injuries and enhancing athletic performance. The Physician and sportsmedicine. 2011;39(1):74-84. Epub 2011/03/08.

89. Valovich McLeod TC, Decoster LC, Loud KJ, Micheli LJ, Parker JT, Sandrey MA, et al. National Athletic Trainers' Association position statement: prevention of pediatric overuse injuries. Journal of athletic training. 2011;46(2):206-20. Epub 2011/03/12.
90. DuRant RH, Rickert VI, Ashworth CS, Newman C, Slavens G. Use of multiple drugs among adolescents who use anabolic steroids. The New England journal of medicine. 1993;328(13):922-6. Epub 1993/04/01.
91. Faigenbaum AD, Zaichkowsky LD, Gardner DE, Micheli LJ. Anabolic steroid use by male and female middle school students. Pediatrics. 1998;101(5):E6. Epub 1998/05/13.
92. Buckley WE, Yesalis CE, 3rd, Friedl KE, Anderson WA, Streit AL, Wright JE. Estimated prevalence of anabolic steroid use among male high school seniors. Jama. 1988;260(23):3441-5. Epub 1988/12/16.
93. Terney R, McLain LG. The use of anabolic steroids in high school students. American journal of diseases of children (1960). 1990;144(1):99-103. Epub 1990/01/01.
94. Johnson MD, Jay MS, Shoup B, Rickert VI. Anabolic steroid use by male adolescents. Pediatrics. 1989;83(6):921-4. Epub 1989/06/01.
95. Windsor R, Dumitru D. Prevalence of anabolic steroid use by male and female adolescents. Med Sci Sports Exerc. 1989;21(5):494-7. Epub 1989/10/01.
96. Komoroski EM, Rickert VI. Adolescent body image and attitudes to anabolic steroid use. American journal of diseases of children (1960). 1992;146(7):823-8. Epub 1992/07/01.

97. Radakovich J, Broderick P, Pickell G. Rate of anabolic-androgenic steroid use among students in junior high school. *The Journal of the American Board of Family Practice / American Board of Family Practice*. 1993;6(4):341-5. Epub 1993/07/01.
98. Bahrke MS, Yesalis CE, Brower KJ. Anabolic-androgenic steroid abuse and performance-enhancing drugs among adolescents. *Child and adolescent psychiatric clinics of North America*. 1998;7(4):821-38. Epub 1999/01/20.
99. Johnston L, O'malley P, Bachman J. Monitoring the future national results on adolescent drug use: Overview of Key findings, 2001. (NHI Publication no. 02-2105). Bethesda, M.D: National Institute on Drug Abuse; 2002.
100. Melia P, Pipe A, Greenberg L. The use of anabolic-androgenic steroids by Canadian students. *Clinical journal of sport medicine : official journal of the Canadian Academy of Sport Medicine*. 1996;6(1):9-14. Epub 1996/01/01.
101. Whitehead R, Chillag S, Elliott D. Anabolic steroid use among adolescents in a rural state. *The Journal of family practice*. 1992;35(4):401-5. Epub 1992/10/01.
102. Nilsson S. Androgenic anabolic steroid use among male adolescents in Falkenberg. *European journal of clinical pharmacology*. 1995;48(1):9-11. Epub 1995/01/01.
103. Kindlundh AM, Isacson DG, Berglund L, Nyberg F. Factors associated with adolescent use of doping agents: anabolic-androgenic steroids. *Addiction (Abingdon, England)*. 1999;94(4):543-53. Epub 1999/12/22.
104. Araújo J, Cabral K, Carvalho M, editors. O uso de esteróides anabolizantes entre estudantes de Educação Física da Universidade Católica de Brasília: Estudo da Prevalência e das Percepções sobre o uso. I Jornada de Pesquisa em Educação Física da Universidade Católica de Brasília; 2001 Julho.

105. Araújo L, Andreolo J, Silva M. Utilização de suplemento alimentar e anabolizante por praticantes de musculação nas academias de Goiânia-GO. Rev Bras Ciên Movim. 2002;10(3):13-8.
106. Galduróz J, Noto R, Carlini E. Levantamento Domiciliar sobre o Uso de Drogas Psicotrópicas no Brasil: Estudo envolvendo as 107 Maiores Cidades do País – 2001. São Paulo: Secretaria Nacional Antidrogas; 2002.

ANEXO I
TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO DO
PRATICANTE DE TREINAMENTO DE FORÇA PARTICIPANTE DO
PROCESSO

PROJETO:
PREVALÊNCIA E PERFIL DA UTILIZAÇÃO DE ESTERÓIDES
ANABOLIZANTES POR PRATICANTES DE TREINAMENTO DE FORÇA COM
IDADE ENTRE 14 E 24 ANOS NA CIDADE DE PIRACICABA-SP

RESPONSÁVEL: Christiano Bertoldo Urtado
Nome completo do participante:

Você acaba de responder a um questionário que tem por objetivo avaliar a prevalência de uso de esteróides anabolizantes em praticantes de treinamento de força. Em um segundo momento, após o término da pesquisa, você receberá informações sobre o uso de tais substâncias e suas consequências para a saúde, visto que sua utilização pode ou não trazer alterações da estrutura corporal.

O questionário, como você pôde perceber, não conta com qualquer forma de identificação que permita, tanto ao pesquisador quanto aos seus auxiliares, alguma forma de reconhecimento dos participantes do projeto.

Assim sendo, está mantido o absoluto sigilo das informações que você acaba de prestar e, como você depositou seu questionário respondido em uma urna lacrada separada de outra onde depositará o presente termo de consentimento, torna-se impossível identificar o seu questionário.

Mesmo assim, caso você não concorde em participar da pesquisa, basta entregar o presente documento colocando um "X" na segunda opção abaixo.

☐ concordo e autorizo o uso das informações que prestarei

☐ não concordo em participar da pesquisa

Data:

Em caso de dúvida ou discordância quanto à aplicação do questionário o interessado poderá consultar o Comitê de Ética em Pesquisa da Faculdade de Ciências Médicas da Universidade Estadual de Campinas. Comitê de Ética em Pesquisa.

Rua: Tessália Vieira de Camargo, 126 - Caixa Postal 6111 13083-887 Campinas – SP

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e-mail: cep@fcm.unicamp.br

ANEXO II
TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO DOS
RESPONSÁVEIS PELO ALUNO PARTICIPANTE DO PROCESSO

PROJETO:

PREVALÊNCIA E PERFIL DA UTILIZAÇÃO DE ESTERÓIDES
ANABOLIZANTES POR PRATICANTES DE TREINAMENTO DE FORÇA COM
IDADE ENTRE 14 E 24 ANOS NA CIDADE DE PIRACICABA-SP

RESPONSÁVEL: Christiano Bertoldo Urtado

Nome completo do participante:

Nome completo do responsável pelo aluno:

O (A) seu (sua) filho (a) está sendo solicitado(a) a responder a um questionário que tem por objetivo estudar a prevalência de uso de esteróides anabolizantes em praticantes de treinamento de força. Cabe esclarecer que não se trata de estudo sobre uso de entorpecentes e seus derivados. Em um segundo momento, após o término da pesquisa, receberão informações sobre o uso de tais substâncias e suas consequências para a saúde, visto que sua utilização pode ou não trazer alterações da estrutura corporal.

O questionário que será aplicado não conta com qualquer forma de identificação que permita, tanto ao pesquisador quanto aos seus auxiliares, alguma forma de reconhecimento dos participantes. Portanto, está mantido o absoluto sigilo das informações que serão prestadas e, como os questionários respondidos serão depositados em uma urna lacrada separada de outra onde será depositado o presente termo de consentimento, torna-se impossível identificar o aluno que responde ao questionário.

Assim sendo, solicitamos a sua indispensável autorização para que seu(sua) filho(filha) participe da pesquisa, apontando abaixo (com um “X”) a sua opção:

☐ concordo e autorizo a participação de meu(minha) filho(a)

☐ não concordo e não autorizo a participação

Data :

Em caso de dúvida ou discordância quanto à aplicação do questionário o interessado poderá consultar o Comitê de Ética em Pesquisa da Faculdade de Ciências Médicas da Universidade Estadual de Campinas. Comitê de Ética em Pesquisa.

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ANEXO III
TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO DA ACADEMIA
PARTICIPANTE

RESPONSÁVEL: Christiano Bertoldo Urtado

Nome da Academia:

Nome do Proprietário ou Responsável pela Academia:

A academia toma conhecimento da pesquisa que será realizada com os praticantes de treinamento de força, sob o título:

PREVALÊNCIA E PERFIL DA UTILIZAÇÃO DE ESTERÓIDES ANABOLIZANTES POR PRATICANTES DE TREINAMENTO DE FORÇA COM IDADE ENTRE 14 E 24 ANOS NA CIDADE DE PIRACICABA-SP,

e, através deste termo de consentimento, autoriza a sua realização, mediante a aplicação de questionário junto aos alunos, dentro dos critérios constantes no projeto, e mediante a autorização dos próprios alunos participantes, conforme termo de consentimento livre e esclarecido.

☐ concordo e autorizo a aplicação do questionário e o uso das informações que prestei

☐ não autorizo a aplicação do questionário

Data:

Em caso de dúvida ou discordância quanto à aplicação do questionário o responsável pela academia poderá consultar o Comitê de Ética em Pesquisa da Faculdade de Ciências Médicas da Universidade Estadual de Campinas. Para tanto poderá fazer uso de um dos meios abaixo

Comitê de Ética em Pesquisa.

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ANEXO IV

INSTRUMENTO DE PESQUISA

QUESTIONÁRIO

DATA DE NASCIMENTO			PESO EM KG	ESTATURA EM CENTÍMETROS	GÊNERO	
DIA	MÊS	ANO			Masculino	Feminino

Q1 – A seguir aponte, por favor, qual o **SEU** atual nível de escolaridade:

1	Analfabeto	2	Até a quarta série do ensino fundamental
3	Até a oitava série do ensino fundamental	4	Ensino médio incompleto
5	Ensino médio completo	6	Ensino superior incompleto
7	Ensino superior completo	8	Não sei informar

Q2 – A seguir aponte, por favor, qual o atual nível de escolaridade **DE SUA MÃE**:

1	Analfabeto	2	Até a quarta série do ensino fundamental
3	Até a oitava série do ensino fundamental	4	Ensino médio incompleto
5	Ensino médio completo	6	Ensino superior incompleto
7	Ensino superior completo	8	Mestrado
9	Doutorado	10	Não tenho conhecimento

Q3 – A seguir aponte, por favor, qual o atual nível de escolaridade **DE SEU PAI**:

1	Analfabeto	2	Até a quarta série do ensino fundamental
3	Até a oitava série do ensino fundamental	4	Ensino médio incompleto
5	Ensino médio completo	6	Ensino superior incompleto
7	Ensino superior completo	8	Mestrado
9	Doutorado	10	Não tenho conhecimento

Q4 – Você participa ativamente do treinamento de força há quanto tempo?

1	Menos de 3 meses	2	Entre 3 e 6 meses
3	Entre 6 e 12 meses	4	Mais do que 12 meses

Q5 – Quantas vezes na semana pratica o treinamento de força?

1	Uma vez	2	Duas vezes
3	Três vezes	4	Quatro vezes
5	Cinco vezes	6	Mais do que 5 vezes

Q6 – Qual o tempo de duração diária do seu treino?

1	Menos que 30 minutos	2	Mais que 30 minutos e menos que uma hora
3	Entre uma hora e uma hora e meia	4	Entre uma hora e meia a duas horas
5	Mais do que duas horas		

Q7 – Você treina ou treinou alguma modalidade esportiva para competição?

1	Não, nunca treinei	2	Sim, já treinei
3	Sim, ainda treino	4	Não, mas pretendo treinar

Se sim, qual ou
quais? _____

Q8 – O que te motivou à pratica do treinamento de força?

1	Melhora na estética corporal	2	Manutenção da saúde
3	Fazer amigos	4	Indicação Médica
5	Competição Esportiva	6	Outra

Se outra Qual? _____

Q9 – Qual(s) é(são) seu(s) objetivo(s) com o treinamento de força? *(Pode anotar mais de um objetivo)

1	Hipertrofia muscular	2	Emagrecimento
3	Definição muscular	4	Saúde
5	Outros		

Qual(s)? _____

Q10 – Qual é o numero de exercícios que faz para membros superiores (braços, peito e costas)?

1	1 exercício	2	2 a 3 exercícios
3	4 exercícios	4	Acima de 4 exercícios

Q11 – Qual é o numero de exercícios que faz para membros inferiores (pernas)?

1	1 exercício	2	2 a 3 exercícios
3	4 exercícios	4	Acima de 4 exercícios

Q12 – Já fez ou faz uso de suplementos alimentares?

1	Sim, estou usando	2	Sim, mas parei de usar
3	Não, nunca usei	4	Não, mas pretendo fazer

Se sim, cite quais: _____

Caso a resposta tenha sido **NÃO, NUNCA USEI** ou **NÃO, MAS PRETENDO USAR**, pule para a questão **Q15**

Q13 – HÁ QUANTO tempo FAZ uso?

1	Menos de 3 meses	2	Entre 3 e 6 meses
3	Entre 6 e 12 meses	4	Mais que 12 meses
5	Usei, mas parei		

Q14 – POR QUANTO tempo FEZ uso?

1	Menos de 3 meses	2	Entre 3 e 6 meses
3	Entre 6 e 12 meses	4	Mais que 12 meses
5	Continuo usando		

Q15 – Está em dieta para ganhar ou perder peso?

1	Sim, para perder peso	2	Sim, para ganhar peso
3	Não		

Q16 – Se sim, essa dieta foi sugerida por quem?

1	Nutricionista	2	Prof. de Educação Física
3	Amigos	4	Internet
5	Outros		

Se outros, quem? _____

Q17 – Você conhece o nome de algum esteróide anabolizante?

1	Sim	2	Não
---	-----	---	-----

Se sim, qual(s)? _____

Q18 – Você conhece alguém de sua idade que já tenha usado esteróide anabolizante?

1	Sim	2	Não
---	-----	---	-----

Q19 – Já foi sugerido a você o uso de esteróide anabolizante?

1	Sim	2	Não
---	-----	---	-----

Se sim para a questão anterior, quem sugeriu o uso?

1	Amigo ou colega	2	Um professor
3	Um treinador	4	Um médico
5	Outra pessoa		

Q20 – Você já usou esteróide anabolizante?

1	Sim	2	Não
---	-----	---	-----

Caso a resposta tenha sido **NÃO**, pule para a questão **Q32**

Q21 – Qual a sua idade, em anos, na primeira vez que fez uso de anabolizante?
 _____ anos

Q22 – Durante quanto tempo você utilizou?

1	Menos de 4 semanas	2	Entre 4 e 6 semanas
3	Entre 7 e 12 semanas	4	Entre 13 e 24 semanas
5	Acima de 24 semanas		

Q23 – Qual ou quais foram as substâncias que você utilizou?

Q24 – Quem aplicava ou aplica as injeções para você?

1	Eu mesmo	2	Um colega ou amigo
3	Um parente	4	Um professor
5	Eu tomava comprimidos	6	Outra pessoa

Q25 – Você compartilhava seringas ou agulhas com outras pessoas?

1	Sim	2	Não
3	Às vezes		

Q26 – Quem orientou o uso de anabolizante?

1	Internet	2	Um colega ou amigo
3	Um parente	4	Um professor ou treinador
5	Um médico	6	Outra fonte

Q27 – Por qual motivo utilizou esteróides anabolizantes?

1	Hipertrofia muscular	2	Emagrecimento
3	Definição muscular	4	Tratamento de alguma doença (cite qual(s))

Q28 – Você se sente ou sentiu mais forte em função do uso?

1	Sim	2	Não
---	-----	---	-----

Q29 – Você se sente ou sentiu mais violento em função do uso?

1	Sim	2	Não
---	-----	---	-----

Q30 – Você teve algum problema de saúde devido ao uso de esteróides anabolizantes?

1	Sim	2	Não
---	-----	---	-----

Se sim, qual(is): _____

Q31 – Onde você adquiriu as substâncias?

1	Na farmácia	2	Com colega ou amigo
3	Com um treinador ou professor	4	Outro meio (cite qual(s))

Q32 – Você considera que conseguir esteróides anabolizantes sem receita é:

1	Muito Fácil	2	Fácil
3	Difícil	4	Muito Difícil
5	Impossível		

Q33 – Você conhece algum efeito indesejável causado pelos esteróides anabolizantes?

1	Sim	2	Não
---	-----	---	-----

Se sim, qual ou quais? _____

Q34 – Você usaria esteróides anabolizantes para melhorar seu desempenho atlético?

1	Sim	2	Não
3	Não sei		

Q35 – Você utilizaria esteróides anabolizantes para ter um corpo mais bonito?

1	Sim	2	Não
3	Não sei		

ANEXO V

APROVAÇÃO DO COMITÊ DE ÉTICA E PESQUISA



FACULDADE DE CIÊNCIAS MÉDICAS
COMITÊ DE ÉTICA EM PESQUISA

www.fcm.unicamp.br/pesquisa/etica/index.html

CEP, 03/02/11
(Grupo III)

PARECER CEP: Nº 1210/2010 (Este nº deve ser citado nas correspondências referente a este projeto).
CAAE: 0941.0.146.000-10

I - IDENTIFICAÇÃO:

PROJETO: "PREVALÊNCIA E PERFIL DA UTILIZAÇÃO DE ESTERÓIDES ANABOLIZANTES POR PRATICANTES DE TREINAMENTO DE FORÇA COM IDADE ENTRE 14 E 24 ANOS NA CIDADE DE PIRACICABA-SP"

PESQUISADOR RESPONSÁVEL: Christiano Bertoldo Urtado

INSTITUIÇÃO: GPEP/FCM/UNICAMP

APRESENTAÇÃO AO CEP: 09/12/2010

APRESENTAR RELATÓRIO EM: 03/02/12 (O formulário encontra-se no site acima).

II - OBJETIVOS

Avaliar a prevalência de uso de esteróides anabolizantes por praticantes de treinamento de força com idade entre 14 e 24 anos na cidade de Piracicaba-SP.

Avaliar e correlacionar o tipo de esteróides anabolizantes com o objetivo do treinamento (hipertrofia ou emagrecimento);

Identificar as drogas mais utilizadas e a relação com a idade, gênero e tempo de treino do usuário.

III - SUMÁRIO

Os hormônios sintéticos derivados da testosterona têm sido usados por muitos atletas, de diferentes modalidades esportivas, para melhorar a performance atlética em esportes profissionais e também nos esportes amadores. Poucos estudos apontam dados epidemiológicos relacionados ao uso desses hormônios por adolescentes frequentadores de academia. Nesse sentido, o objetivo dessa tese será avaliar a prevalência de uso de esteróides anabolizantes em praticantes de treinamento de força na cidade de Piracicaba-SP, além de correlacionar o tipo de esteróides anabolizantes com o objetivo do treinamento (hipertrofia ou emagrecimento) e por fim identificar as drogas mais utilizadas e a relação com a idade, gênero e tempo de treino do usuário. Para isso, serão avaliados praticantes de treinamento de força com idade entre 14 e 24 anos, frequentadores da academia por no mínimo 3 meses e munidos do termo de consentimento livre e esclarecido assinado, ou, quando menor de idade, assinado pelos pais ou responsáveis. O questionário será confeccionado com base em testes de doutorado e artigos relacionados e será testado em academias de outra cidade, com o mesmo público alvo, em um total de 25 voluntários, com a finalidade de identificar e corrigir possíveis falhas de metodologia no mesmo. A reprodutibilidade será mensurada após o teste e um reteste, consistindo de uma segunda aplicação após 15 dias com os mesmos sujeitos, feita pelo mesmo aplicador. Para as respostas categóricas nominais será aplicado o índice de concordância Kappa (K) e para as variáveis quantitativas realizar-se-á a análise de correlação de Person e Sperman. Acredita-se que adolescentes do gênero masculino, com mais tempo de academia, apresentem maior incidência de uso, além de apresentarem como objetivo com o treinamento de força e o uso de hormônio a hipertrofia muscular e não o emagrecimento. Possivelmente o decanoato de nandrolona seja o hormônio mais utilizado.

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- 1 -



IV - COMENTÁRIOS DOS RELATORES

Após respostas às pendências, o projeto encontra-se adequadamente redigido e de acordo com a Resolução CNS/MS 196/96 e suas complementares, bem como o Termo de Consentimento Livre e Esclarecido.

V - PARECER DO CEP

O Comitê de Ética em Pesquisa da Faculdade de Ciências Médicas da UNICAMP, após acatar os pareceres dos membros-relatores previamente designados para o presente caso e atendendo todos os dispositivos das Resoluções 196/96 e complementares, resolve aprovar sem restrições o Protocolo de Pesquisa, bem como ter aprovado o Termo do Consentimento Livre e Esclarecido, assim como todos os anexos incluídos na Pesquisa supracitada.

~~O conteúdo e as conclusões aqui apresentados são de responsabilidade exclusiva do CEP/FCM/UNICAMP e não representam a opinião da Universidade Estadual de Campinas nem a comprometem.~~

VI - INFORMAÇÕES COMPLEMENTARES

O sujeito da pesquisa tem a liberdade de recusar-se a participar ou de retirar seu consentimento em qualquer fase da pesquisa, sem penalização alguma e sem prejuízo ao seu cuidado (Res. CNS 196/96 – Item IV.1.f) e deve receber uma cópia do Termo de Consentimento Livre e Esclarecido, na íntegra, por ele assinado (Item IV.2.d).

Pesquisador deve desenvolver a pesquisa conforme delineada no protocolo aprovado e descontinuar o estudo somente após análise das razões da descontinuidade pelo CEP que o aprovou (Res. CNS Item III.1.z), exceto quando perceber risco ou dano não previsto ao sujeito participante ou quando constatar a superioridade do regime oferecido a um dos grupos de pesquisa (Item V.3.).

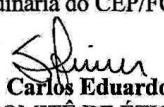
O CEP deve ser informado de todos os efeitos adversos ou fatos relevantes que alterem o curso normal do estudo (Res. CNS Item V.4.). É papel do pesquisador assegurar medidas imediatas adequadas frente a evento adverso grave ocorrido (mesmo que tenha sido em outro centro) e enviar notificação ao CEP e à Agência Nacional de Vigilância Sanitária – ANVISA – junto com seu posicionamento.

Eventuais modificações ou emendas ao protocolo devem ser apresentadas ao CEP de forma clara e sucinta, identificando a parte do protocolo a ser modificada e suas justificativas. Em caso de projeto do Grupo I ou II apresentados anteriormente à ANVISA, o pesquisador ou patrocinador deve enviá-las também à mesma junto com o parecer aprovatório do CEP, para serem juntadas ao protocolo inicial (Res. 251/97, Item III.2.e)

Relatórios parciais e final devem ser apresentados ao CEP, de acordo com os prazos estabelecidos na Resolução CNS-MS 196/96.

VII- DATA DA REUNIÃO

Homologado na XII Reunião Ordinária do CEP/FCM, em 21 de dezembro de 2010.


Prof. Dr. Carlos Eduardo Steiner
PRESIDENTE do COMITÊ DE ÉTICA EM PESQUISA
FCM / UNICAMP

Comitê de Ética em Pesquisa - UNICAMP
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ANEXO VI
COMPROVANTE DE SUBMISSÃO DO PAPER 1

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Thank you for submitting your manuscript to *Pediatrics*.

Manuscript ID: 2014-1354

Title: Questionnaire to assess the prevalence of anabolic steroid users among young resistance trained

Authors: Urtado, Christiano
Urtado, Marília
de Carvalho, Érica
Filho, Daniel
Montebello, Maria
Filho, José

Date Submitted: 07-May-2014



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COMPROVANTE DE SUBMISSÃO DO PAPER 2

Journal of Strength and Conditioning Research

USE OF ANABOLIC STEROIDS IN SUBJECT'S REGULAR RESISTANCE TRAINED
AMONG 14 AND 24 YEARS IN PIRACICABA-SÃO PAULO, BRAZIL

--Manuscript Draft--

Manuscript Number:	
Full Title:	USE OF ANABOLIC STEROIDS IN SUBJECT'S REGULAR RESISTANCE TRAINED AMONG 14 AND 24 YEARS IN PIRACICABA-SÃO PAULO, BRAZIL
Short Title:	
Article Type:	Original Investigation
Keywords:	prevalence, profile, hormones, youngster, resistance exercise
Corresponding Author:	Christiano Bertoldo Urtado, Ph.D UNICAMP BRAZIL
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	UNICAMP
Corresponding Author's Secondary Institution:	
First Author:	Christiano Bertoldo Urtado, Ph.D
First Author Secondary Information:	
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Order of Authors Secondary Information:	
Manuscript Region of Origin:	BRAZIL
Abstract:	The synthetic hormones derived from testosterone have been used by many athletes, practicing diverse sport modalities in order to improve their performance and the use is also extended to young. Related epidemiological data of the use of these hormones by young resistance trained subjects, particularly in Brazil are lacking. Our purpose was to evaluate the prevalence of anabolic steroids (AS) in regular resistance trained subjects in the city of Piracicaba-SP, besides identifying risk factors, the most frequently used drugs and the profiles of the users. A previously validated questionnaire was applied to young between 14 to 24 years resistance trained subjects in gyms registered in a respected agency of the kind. A descriptive analysis of the results and among variables was done using the chi-square test. The prevalence was 15% for the male sex and 2,6% for the female sex. Muscle hypertrophy appeared to be the most prevalent objective (22,8%), followed by muscle definition (4,6%), weight loss (2,9%) and the less prevalent was health (2,6%). Among the hormones, Durateston was mentioned most (43%), followed by Deposteron and Winstrol (34%) and Nandrolone Decanoate (26%). Now the most cited dietary supplements were BCAA with 17%, whey protein and hypercaloric with 15%, followed by, maltodextrine, albumin and creatine, all with 13% of usage. Our data evinced that an important number of regular resistance trained subjects in the city of Piracicaba-SP were users of hormones and other substances, it being considered a public health problem and which serves attention and a special behavior of personal trainers and coaches.
Suggested Reviewers:	Jonato Prestes, Ph.D jonatop@gmail.com Relevant researcher in Brazil in strength training

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