



Anabolic Androgenic Steroids Induce Reversible Left Ventricular Hypertrophy and Cardiac Dysfunction. Echocardiography Results of the HAARLEM Study

Diederik L. Smit^{1*}, A. J. Voogel², Martin den Heijer³ and Willem de Ronde⁴

¹Department of Internal Medicine, Spaarne Gasthuis, Haarlem, Netherlands, ²Department of Cardiology, Spaarne Gasthuis, Haarlem, Netherlands, ³Department of Internal Medicine, Amsterdam University Medical Centres, Amsterdam, Netherlands

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*Correspondence:

Diederik L. Smit
smit_diederik@hotmail.com

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Background: The use of anabolic androgenic steroids (AAS) is not uncommon among strength athletes. Several cross-sectional studies have linked AAS use to heart disease, but a causal role for AAS is not certain and it is unknown whether cardiac changes are reversible.

Methods: Men of at least 18 years old intending to start an AAS cycle on short notice were included for comprehensive 3D echocardiographic examination before (T_0), at the end of the cycle (T_1), and 1 year after inclusion (T_2) after a recovery period. Details of the AAS cycle performed and the use of other performance and image-enhancing drugs (P-EDs) as well as illicit drug use were recorded. Trend analysis and multivariable regression analysis were performed with mixed effects linear models.

Results: Thirty-one subjects were included. Between start (T_0) and end of the cycle (T_1), after a median AAS cycle duration of 16 weeks, 3D left ventricular ejection fraction declined with 4.9% (CI -7.2 to -2.5, $P < 0.001$), E/A-ratio declined with -0.45 (CI -0.69 to -0.21, $P < 0.001$), and 3D left atrial volume increased with 9.2 ml (CI 2.9–15.4, $P = 0.004$). Left ventricular mass increased with 28.3 g (CI 14.2–42.4, $P < 0.001$) and was positively correlated with AAS average weekly dose. After a median recovery time of 8 months (T_2), all parameters returned to baseline.

Conclusion: AAS induce left ventricular hypertrophy and impaired systolic and diastolic function in amateur strength athletes. The structural cardiac changes are positively associated with AAS dose and complete recovery occurred after AAS were discontinued.

Keywords: anabolic steroids, performance and image-enhancing drugs, strength athletes, bodybuilding, three-dimensional echocardiography

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lesser known hormones or hormone like substances such as the somatomedins A B and C the epidermal growth factor the insect hormones parathyroid hormone 1 25 dihydroxycholecalciferol and prostaglandins Endocrinologists and physiologists will find the text invaluable *Endocrinology of the Testis and Male Reproduction* Manuela Simoni, Ilpo T.

Huhtaniemi, 2017-09-18 This book provides a comprehensive overview of endocrinology of the male reproductive system explaining how it works and how sometimes it fails to work World class specialists present state of the art knowledge on all aspects including anatomy physiology molecular biology genetics pathophysiology clinical manifestations of testicular diseases endocrine aspects of andrological and sexual diseases and therapy Extensive consideration is given to sexual development testicular function the clinical approach to disorders of male reproduction male hypogonadism sexual dysfunction and male infertility In addition sociodemographic psychological and ethical aspects of male reproductive disorders are discussed The book is intended as a major reference for endocrinologists andrologists and sexologists as well as basic and clinical scientists It is published as part of the SpringerReference program which delivers access to living editions constantly updated through a dynamic peer review publishing process **Endocrine Aspects of Successful**

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Warren, Naama W. Constantini, 2000-05-01 Since the observation in the 19th century that an extract of the suprarenal bodies injected into the circulation caused a rise in blood pressure the endocrine system has become a major component in our understanding of human physiology The introduction of radioimmunoassay techniques and the ability to measure minimal amounts of hormones a term derived from the Greek to excite have shown that acute exercise causes a release of a large number of hormones and that chronic exercise may further lead to long term alterations in endocrine homeostasis Actually almost every organ and system in the body is affected by physical activity and exercise much of it through the endocrine and neuroendocrine system Investigation of the effect of acute or chronic physical activity on the endocrine system is a complex matter since the stimulus called exercise has many components such as mode intensity duration and others In addition several other factors such as age gender training status body temperature circadian rhythm metabolic state menstrual cycle and various external conditions as well as psychological factors can modify the effect of physical activity on hormonal

secretion Moreover the physiological stimulus of exercise often provokes several and parallel cascades of biochemical and endocrine changes It is therefore often extremely difficult to distinguish between primary and secondary events and between cause and effect These limitations will be discussed in Chapter 1

An Introduction to Neuroendocrinology Richard E. Brown, 1994-01-27 This book is designed as an introductory text in neuroendocrinology the study of the interaction between the brain and endocrine system and the influence of this on behaviour The endocrine glands pituitary gland and hypothalamus and their interactions and hormones are discussed The action of steroid and thyroid hormone receptors and the regulation of target cell response to hormones is examined The function of neuropeptides is discussed with respect to the neuroendocrine system and behaviour The neuroimmune system and lymphokines are described and the interaction between the neuroendocrine and neuroimmune systems discussed Finally methods for studying hormonal influences on behaviour are outlined Each chapter has review and essay questions designed for advanced students and honours or graduate students with a background in neuroscience respectively

Neuropeptides and Brain Function Gyula Telegdy, 1987

Molecular Pathomechanisms and New Trends in Drug Research Gyorgy Keri, Istvan Toth, 2002-11-14 Knowledge of the basic mechanisms of human disease is essential for any student or professional engaged in drug research and development Functional gene analysis genomics protein analysis proteomics and other molecular biological techniques have made it possible to understand these cellular processes opening up exciting opportunities for no

Biomedical Index to PHS-supported Research, 1990

The EACVI Textbook of Cardiovascular Magnetic Resonance Victor Ferrari, 2018-09-13 This highly comprehensive and informed textbook has been prepared by the Cardiovascular Magnetic Resonance section of the European Society of Cardiology association on imaging the EACVI The EACVI Textbook of Cardiovascular Magnetic Resonance is the authority on the subject The textbook is aligned with ESC Core Curriculum and EACVI Core Syllabus for CMR It is a practical resource and provides a disease orientated outlook on the subject Structured with thirteen clear and detailed sections ranging from Physics to Methodology and featuring specific sections on ischemic heart disease myocardial disease pericardial disease and congenital heart disease and adult congenital heart disease The EACVI Textbook of Cardiovascular Magnetic Resonance provides extensive knowledge across the entire subject area in CMR Beautifully illustrated and physical principles enriched with schematic animations the textbook is advanced further with key video content based on clinical cases Written by leading experts in the field from across the world the textbook aims to summarise the existing research and clinical evidence for the various CMR indications and provide an invaluable resource for cardiologists and radiologists across the board The textbook is ideal for cardiologists and radiologists new to the field of Cardiovascular Magnetic Resonance those preparing for ESC certification in CMR and those established in the field wishing to gain a deep understanding of CMR Online access to the digital version is included with purchase of the print book with accompanying videos referenced within the text available on Oxford Medicine Online

Receptors for Reproductive

Hormones Bert O'Malley, 2013-11-11 We are especially grateful to Dr Philip Corfman and his colleagues of the Population and Reproduction Grants Branch of NICHD for making this Conference possible The format of this volume follows in general the order in which the papers were presented during the Conference The Conference was divided into four sessions each of which was presided over by a capable and distinguished scientist Each of these chairmen Drs T H Hamilton G A Puca R L Vande Wiele and H G Williams Ashman provided valuable discussion and for their services we are most appreciative The Editors are indebted to Mr Robert Colligan for his help in organizing and in redacting the manuscripts A special commendation is also extended to Ms Mary Jane Fowler who cheerfully and efficiently typed this entire volume Finally we express thanks to the individual participants of the Conference for their cooperation and prompt submission of the manuscripts and to the Plenum Press for ensuring the rapid publication of this volume Anthony R Means Ph D Bert W O Malley M D

Neuropeptides and Psychosomatic Processes Elemér Endrőczy, 1983

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