

4th International Conference on Clinical & Experimental Cardiology

April 14-16, 2014 Hilton San Antonio Airport, TX, USA

Heart rate regulation and stress resistance of elite athletes

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Introduction: The perception and processing of visual information were one of main part of sporting activity for qualification athletes. But level of neurodynamics and psychic characteristics in competition condition relation with functional states of athletes. One of the key components of functional states in possibilities to stress resistance in elite athletes. But one of the main parts of support during tension muscular activity is system of autonomic regulation of heart rate. Due the different character of reaction on physical load the relation between system of heart rate regulation and stress resistance were non-suffice studied in qualification athletes.

Aim: The study of peculiarities of autonomic regulation of heart rate and stress resistance of elite athletes.

Methods: A total of 24 elite athletes (different age), members of the Ukrainian National Team in Greco-Roman wrestling were examined. The level of psycho-emotional resistance (stress tolerance) was determined by the results of test called "Stress Test" with analysis of information regarding the positioned selection of objects in appropriate cells in adopted mode. The autonomic regulation of heart rate was studied by cardio monitor «Polar-RS800CX».

Results: The study are demonstrates the higher level of information processed by athletes in the younger age group and confirms the superior capabilities of cognitive functions of the athletes in this group. This means that age component doesn't really matter in the measurement of efficiency of execution of the motor tasks with external stimulus in conditions of psycho-emotional stress. In athletes in a younger age group (19-24 years) show the balance of nervous processes of acceleration and deceleration. This balance is in agreement with the presence of higher productivity of visual perception and visual information processing efficiency comparing with older age group (27-31 years). Growth of the level of sensor motor response in athletes is associated with an increase of tension of autonomic regulation of heart rate due to the weakening of parasympathetic tone. In athletes with high levels of sensor motor response revealed that stochastic functional organization of the regulation of heart rate as a result of adaptation of an athlete to intense muscular activity.

Conclusion: Consequently, prevalence of acceleration processes in older age group leads to deterioration of visual information perception and processing. The psycho-emotional tension on athletes in older age group causes significant changes in heart rate variability signifying the stress type of loading. In younger age group the changes of vegetative balance were noticed (LF/HF), and that indicates the amplifications of sympathetic activation of heart rate regulation, although the absolute changes are twice the variables of older age group.

Biography

Georgiy Korobeynikov is a Professor at the Department of Sport Biology, National University of Physical Education, Ukraine. He had done his Doctor of Biology Sciences thesis at Aging peculiarities of functional organization of basic kinds of human activity Defended in National Taras Shevchenko University of Kiev (200). And his Post-graduate study at the Department of Physiology, Sport Faculty, Kiev State Institute of Physical Culture and Ph.D. thesis at Correction of adaptation process of cardiovascular system of sportsmen in intensive muscular activity conditions. Defended in Institute of Cybernetics National on Ukrainian Academy of Science (Kiev, 1992). His research interest are psycho physiological and psychological diagnostics in wrestlers and have a diverse interests, which include ethics and social science research aimed at doping use prevention.

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