



OPTIMIZING HEALTH STATUS IN AEROBIC GYMNASTICS

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Abstract

Aim of study

This work is intended to be a plea for what negative effects of sedentary life represent, but also of the manner they could be prevented and removed, for optimizing body health status, through training in which effort shall be dosed, depending on a series of individual traits (age, sex, trouble).

Methods

The study has been performed on a number of 10 persons, of feminine sex (5 from the control lot and 5 from the experimental one) aged between 34 and 46 years old. For better emphasizing the favorable dynamic to subjects from experimental lot, as compared with control lot, initial and final results obtained from subjects in the two lots have been analyzed by Hettinger and Ruffer tests.

Results

Final testing of the subjects from experimental lot shows an improvement in rates for mobility, strength and resistance, as opposed to initial testing. The subjects from the control lot who developed a normal daily activity, with no aerobic training, obtained feebler results, both in initial, and in final testing, not being registered any significant modification of rates following both tests.

Conclusions

Aerobic gymnastics training within weekly training program leads, in time, to individual health status improvement. Training on a regular basis and in an organized manner contributes to removal of some effects induced by sedentary life: negative physical conditions, low effort capacity and to improvement of motor qualities (strength, resistance, mobility).

Key words: health status, aerobic gymnastics, effects of sedentary life

Introduction

This work is intended to be a plea for what negative effects of sedentary life represent, but also of the manner they could be prevented and removed, in order to optimize body health status, through training in which effort shall be dosed, depending on a series of individual traits (age, sex, trouble).

The effects of sedentary life

Many of current professions are considered as being sedentary, in the sense that they are defined by minimum energy expenditure. At a muscular level, lack of physical exercise can lead, in time, to muscle atrophy as well as to their strength weakening. A percentage of 35 to 42% of body weight is represented by muscles, and body's vertical line is supported by them and by skeletal system. An individual with weak muscles will suffer from deficiency in posture, movement, physical strength. Vicious working postures are one of the most serious consequences of sedentary jobs (T. Ogawa et al., 1992). Prolonged body bending forward, its binding on the right or on the left side, too low or too high posture at the table leads to spinal distortion. In time, much more serious deficiencies could appear: osteoporosis, arthrosis, sprains, and lombosciatalgy. At a digestive level, for sedentary individuals digestive disorders are tormenting: constipation, biliary calculus, colitis, hemorrhoids, favored by static posture and especially by sitting down.

At the level of urinary apparatus and of annex glands are noticed, due to static postures specific to

sedentary work, a stasis in the small pelvis with annexitis resurgence or triggering and of other genital inflammations (D. Swart, M. Pollock, W. Brechue, 1996).

At the heart level, dropping of VO₂ max. lies at the basis of brutal drop of beat volume and of cardiac flow (consequently, a net increase of cardiac rhythm is established). Cardiac vagal tone drops and catecholamines secretion increases as well as cardiac beta-receptors' sensitivity. At a circulatory level, sanguine circulatory volume drops, venous return (drops translated by decreasing of heartbeat volume). Muscular sanguine flux, capillarization, erythrocyte volume and oxidative enzymes drop (L. Braun, 1991). At a respiratory level, lungs are insufficiently oxygenized, respiratory ability is low and resistance to weather changes and to infections lacks. At a nervous system level, fatigue, overtension of nervous centers and others' languor set in, unbalance of inhibition-excitation processes with setting in of inertia states or pathological excitation appears and other deviations that manifest especially under the shape of neuroses. At a metabolic level, a serious consequence of sedentary life is obesity.

1. Producing energy in the body is a vital need, without which life couldn't exist. This energy results from catabolisation of the three groups of food principles: sugars, fats and proteins (R.G. McMurray, et al., 1985). Following nourishment entering the body through digestion process in the tube, complex carbohydrates pass in glucosis, fructosis, in



galactosis, fat into fatty acids and proteins in amino acids. From there they are absorbed under this shape and converted to hepatic and muscular tissue level. To these levels, through processes of total oxidation, release of energy needed for living takes place. When physical activity is performed, energy consumption of the muscles can reach important values, as opposed to sedentary life, case in which it is reduced (C.A. Milesis, et al., 1976). Naturally, the excess of material deposits under the shape of fat. This depositing takes place over the entire body, but especially under the skin of certain body regions and around viscera. The increase by 10-20 % from the ideal weight is considered overweight (obesity), by the uncomfortable state of disease or function disturbance (A. Thorstenson, B. Hulthen, et al., 1976). Obesity can be of android type and could cause atherosclerosis, diabetes mellitus, etc. and of ginoid type and could cause pain to the spine, ankles, knees and hips level. Cellulite is sediment, a summing up of wear substances and fat cells, subcutaneous, on the level of the abdomen, of the buttocks, lower limbs, characterized by cell infiltration of interstitial liquids. Production mechanism: in sedentary individuals, gas exchange from tissues level is reduced, fixed tissue oxygen is not enough, and elimination of carbonic acid is reduced, which produces humoral acidity: muscular masses' mobility favors mechanically infiltration. The result of fattening, of the increase of adipose tissue is the stimulation of insulin secretion. This hyperinsulinism maintains obesity's vicious circle. In time, stimulated pancreatic cells continue producing excess insulin, get tired and reach to diminishing of insulin secretion under normal conditions of carbohydrates' metabolism. Glucose in the blood increases and appears in urine, which means setting in of diabetes that could lead to a series of serious co-

implications: myocardial infarction, cerebral hemorrhage, retinopathy, nephropathy, etc. All these perturbances could be avoided by kinetic prophylaxis programs composed by aerobic exercises, adapted to and dosed depending on individual particularities. In theory, it is known the fact that in order to improve the quality of motricity and of effort capacity it is necessary to combine within aerobic gymnastics exercises of strength, mobility and resistance. In practice, very few individuals do various physical activities. Generally, sedentary persons prefer stretching or cycloergometer, not being informed of the importance of associating more types of aerobic exercises for the development of all the qualities of motricity and last, but not least, for the increase of effort capacity. Being aware of these aspects I have formulated two hypotheses to allow me to start this experiment in a fitness and aerobic gymnastics center:

1. If an aerobic gymnastics training shall be practiced within weekly programs this shall lead, in time, to the improvement of individual's health status;

2. If an aerobic training shall be practiced on a regular basis and in an organized manner, this shall contribute to abolishment of some effects induced by sedentary life: negative physical conditions, low effort capacity and motricity qualities shall be improved (strength, resistance, mobility).

Methods

The study was performed on a number of 10 females (5 from the control lot and 5 from the experimental one) aged between 34 and 46 years old. For better emphasizing the favorable dynamic to subjects from experimental lot, as compared with control lot, initial and final results obtained from subjects in the two lots have been analyzed by Hettiger and Ruffier tests.

Table no. 1- Subjects belonging to experimental lot

No.	Name	Sex	Age
1.	A.M.	F	46
2.	S.E.	F	40
3.	C.C.	F	38
4.	B.A.	F	42
5.	B.N	F	38

Table no. 2 – Subjects belonging to control lot

No.	Name	Sex	Age
1.	M.D.	F	45
2.	A.B.	F	34
3.	L.M.	F	41
4.	N.O.	F	38
5.	R.P.	F	39

Subjects in experimental lot took aerobic sessions by a mutual agreement pre-established program with all participants in the experiment, and those in control lot

developed a normal physical activity and didn't participate in any type of aerobic training that leads to effort capacity increase.

Admission criteria to experimental and control lots were:

- a sedentary life regimen;
- lack of diseases that counter- indicate effort or other invalidant diseases;
- females.

Subjects' final testing in the experimental lot shows an improvement of scores for mobility, strength

and resistance, as opposed to initial testing. Subjects in the control lot who developed a normal physical activity, with no type of aerobic training, obtained low results both in initial testing and in final testing, not being registered any significant modification of scores following both tests.

Table centralizing scores no. 3- initial values in Hettinger and Ruffer tests

Experimental lot	Mobility ex. 1, 2, 3	Balance ex. 4, 5	Strength ex. 6, 7	S + R* ex. 8, 9, 10	Ruffier index
A. M.	15 p	20 p	4 p	2 p	Medium
S. E.	21p	18 p	10 p	4 p	Medium
C. C.	20 p	20 p	10 p	4 p	Medium
B. A.	17 p	20 p	9 p	2 p	Medium
B. N.	12p	18 p	9 p	8 p	medium

- S= strength; R= resistance

Table centralizing scores no. 4- final values in Hettinger and Ruffer tests

Experimental Lot	Mobility ex. 1, 2, 3	Balance ex.4, 5	Strength ex. 6, 7	S + R ex. 8, 9, 10	Ruffier index
A. M.	28 p	20 p	8 p	7 p	Good
S. E.	25p	20 p	16 p	10p	Good
C. C.	29 p	20p	17 p	16 p	good
B. A.	28 p	20 p	17 p	16 p	Medium
B. N.	28 p	20 p	17 p	19p	good

Table centralizing scores no. 5- initial values in Hettinger and Ruffer test

Control lot	Mobility ex. 1, 2, 3	Balance ex. 4, 5	Strength ex. 6, 7	S + R ex 8, 9, 10	Ruffier index
M. D.	17 p	20 p	7 p	2 p	Medium
A. B.	15 p	18 p	4 p	1 p	Satisfactory
L. M.	19 p	20 p	8 p	3 p	Medium
N. O.	20 p	20 p	10p	4p	satisfactory
R. P.	20 p	20 p	10 p	4 p	satisfactory

Table centralizing scores no. 5- initial values in Hettinger and Ruffer test

Control lot	Mobility ex. 1, 2, 3	Balance ex. 4, 5	Strength ex. 6, 7	S + R ex. 8, 9, 10	Ruffier index
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M. D.	19 p	20 p	7 p	2 p	Medium
A. B.	13 p	18 p	4 p	2 p	Satisfactory
L. M.	14 p	18 p	7 p	2 p	Medium
N. O.	14 p	14 p	9 p	3 p	Medium
R. P.	17 p	20 p	8 p	3 p	Satisfactory

Conclusions

The results of the experiment confirm the hypotheses from which the research started. Analyzing all data obtained from the subjects in experimental lot related to physical and psychical adaptations that occurred following systematic practice of physical activities, we can conclude:

- Aerobic gymnastics program determines, in time, the improvement of motricity qualities and of effort capacity;
- Optimal effects on psychical, cardiovascular and locomotive level are obtained only by sustained and regular practice of aerobic training.
- Subjects who participated in this experiment enjoy, at present, a series of advantages: numerous favorable modifications from psychical and physical points of view, they have more energy and resistance to efforts and they benefit from that wellbeing that practicing aerobic physical exercise can induce.
- In sedentary individuals physical exercise shouldn't miss from daily program, given the fact that they have a predisposition for a series of negative psychical and physical conditions.
- Practicing an aerobic gymnastics training within weekly training programs leads, in time, to individual health status improvement.
 - Training on a regular basis on in an organized manner contributes to abolishment of some

effects induced by sedentary life: negative physical conditions, low effort capacity and to improvement of motricity qualities (strength, resistance, mobility).

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