L'aquagim représante une neuve méthode de la tehnologie d'éducation motrice en pouvent d'être adaptée on particulements d'âge et an niveau de préparation, ainsi que aux préferences individuelles et de groupe en contribueant an modification optime, des comportaments et des capacités phisiques.
An cadre de recherche j'ai elaboré et j'ai apliqué un questionnaire dans quel j'ai desiré o distinquer l'efficacité, le degré d'attraction, les bénefices et les préférences d'aquagim.
La recherche releve le fait que les résultates de pratiquer l'aquagim sont complexes, mais motivations de practiciens sont différents en fonction des effets et d'attraction des différentes types d'exercices specifiques.
Mats clef: *L'aquagim, methode, technologie d'éducation, préference, comportement motric, redressement.*

MONITORING THE HEART RATE OF TRAINED AND OF UNTRAINED STUDENTS IN PHYSICAL EFFORT

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Abstract:
During a physical exercise, the heart parameters (systolic volume, heart flow, heart rate and blood pressure) change depending on the amount of oxygen (VO2) needed by the human body.
The cardiovascular assessment aims the morphological and functional state of the cardiovascular apparatus, at rest or in a dynamic situation. The results of this assessment are different, as the subject is an athlete or a person who does not usually practise any sport.
It is good to know these morphological and functional peculiarities to not consider them pathological.
The monitored parameters are numerous and their interpretation requires specialized personnel.
Key words: *Effort, heart rate, motrical capacity*.

INTRODUCTION

The heart is a ribbed muscle commanded by the autonomic nervous system. It ensures the blood flow, meaning the transport of oxygen and nutrients to the peripheral tissues.

During a physical exercise, the heart parameters (systolic volume, heart flow, heart rate and blood pressure) changes depending on the amount of oxygen (VO2) needed by the human body.

The systolic volume increases when the state of rest is replaced by a moderate effort. In most cases, it is maximum for sub maximal intensity, when the oxygen consumption is about 40% of maximum oxygen consumption.

For the same oxygen consumption, the systolic volume is lower in women than in men. Moreover, due to lower heart volume, the systolic volume reaches a maximum during a sub maximal exercise.

The heart flow is relatively constant during the state of rest and registers values of 5-6 l/min.

During training or a strenuous physical exercise the heart flow increases 4-7 times than in the state of rest, based on the heart rate and the systolic volume.

The systematic exercise is responsible for the heart rate decrease and also the increase effort capacity and maximum oxygen consumption with athletes.

The increase of the systolic volume and of the heart rate indicates an efficient cardiovascular system and can achieve a maximum heart flow with a much lower heart rate. This is observed in highly trained athletes or performed athletes.

According to the World Health Organization, there are no differences between athletes and unsportsmanlike on rest state blood pressure. The systolic blood pressure at rest has values from 100 to 140 mmHg and 60-90 for diastolic mmHg. The average of the arterial blood pressure is about 90-100 mmHg and is an indicator of blood flow in the great circulation.

The cardiovascular assessment aims the morphological and functional state of the

cardiovascular apparatus, at rest or in a dynamic situation.

The effort functional tests confront the subject with efforts of different intensities, with the main objective to detect the dysfunctions or abnormalities of the cardiovascular system, sometimes unnoticed in the state of rest. The values can be taken in the dynamic state and the testing results can be used as benchmarks for each subsequent assessment.

Most current sport activities associate the isometric with the isotonic contractions using the dynamic type effort as well, because it produces significant requests in terms of volumetric and barometric cardiovascular system, being directly proportional to the intensity of effort provided. Under effort, the adaptation of the cardiovascular muscle is proportional to the mass requested, which must be less than 50% of total muscle mass, amounting to no longer produces changes to the cardiovascular stress by adding new muscle groups.

The results of this assessment are different, as the subject is an athlete or a person who does not usually practise any sport.

Intense and regular practice of a sport can induce adaptive cardiovascular changes (clinical, morphological and functional) grouped as "sporting heart". It is good to know these morphological and functional peculiarities to not consider them pathological.

The monitored parameters are numerous and their interpretation requires specialized personnel.

MATERIAL AND METHOD

We chose for testing a total of six students, four boys and two girls. Two of the boys and a girl are athletes:
Ionuț Bâră, volleyball player for four years;
BogdanIanoşi, dancer for five years;
RamonaVodă, football player for six years.

The other three students, Norbert Hăineală, Dragoş Ianoşi and Cristina Voica practised different sports for short periods of time, but currently do not practise any sports activity beside the physical education classes.

To show this thing we used the Ruffier test. This is a test for driving ability assessment, and it is easy to achieve without specialized equipment.

The students were trained on the progress of this test and will be taught to measure their heart rate.

This test was applied to three different types of exercises:

1. 50 m speed running;
2. 30 minutes basketball game;
3. strength.
   - boys: 16 pushups with feet resting on a gym bench; 10 leg raises at 90^{o} from hanging at the fixed scale; successive long jumps (minimum 6 m).
   - girls: 10 pushups;
   - 16 knee liftings to the chest from hanging at the fixed scale;
   - 10 vertical jumps from squatting in extension with hands stretched above the head.

During the three types of exercises the effort had the following characteristics:

1. at the speed running we have different kinds of effort: professional, dynamic, cyclic, continuous, single, specific, at maximum intensity (0-10 sec.);
2. at the basketball game, we have professional, dynamic, acyclic, discontinuous, unique, specific, at moderate intensity (30 min.) effort;
3. strength: professional, combined (more static), acyclic, unique, specific, at submaximal intensity (1 min.) effort.

DESCRIPTION OF THE RUFFIER TEST

The Ruffier test is a sub maximal exercise test based on the heart rate during the recovery effort.

The pulse is measured in a seated position, the value is put down as P1.

The types of exercises made are: speed running, basketball, strength. Within the first 15 seconds after the end of the exercise, the subject is supine, the pulse is measured and recorded as P2.

The number of pulses are determined after 1 minute of rest in supine, the values obtained are put down as P3.

The Ruffier index is calculated using the following formula: Ruffier INDEX = [(P2-70) + (P3-P1)] / 10

The interpretation is made due to the value of the Ruffier index:

- 0 to 2.9 = good index;
- 3-6 = middle index;
- over 6 = poor index.

The results of the tests have been registered in some summary tables, and then were graphically interpreted. At the first test the subjects had speed run over a distance of 50 m. The times obtained, the heart rate after running and the Ruffier Index values are presented in Table 2.

Table 1. Anthropometric indices

	Name and surname	Age	Height	Weight
1.	Hăineală Norbert	17 years	174 cm	60 kg
2.	Bâră Ionuț	17 years	184 cm	61 kg
3.	Ianoşi Dragoş	18 years	180 cm	74 kg
4.	Ianoşi Bogdan	18 years	177 cm	64 kg
5.	Vodă Ramona	17 years	164 cm	58 kg
6.	Voice Cristina	18 years	168 cm	68 kg

RESULTS AND DISCUSSION

Table 2. Heart rate after speed running and times

Name and surname	Time made	P1	P2	P3	Ruffier Index
Hăineală Norbert	6.6 sec.	72	110	76	4.4
Bâră Ionuț	7.0 sec.	60	77	62	0.9
Ianoşi Dragoş	6.5 sec.	72	115	78	5.1
Ianoşi Bogdan	6.3 sec.	68	96	70	2.8
Vodă Ramona	7.2 sec.	70	98	70	2.8
Voica Cristina	7.7 sec.	66	114	78	5.6

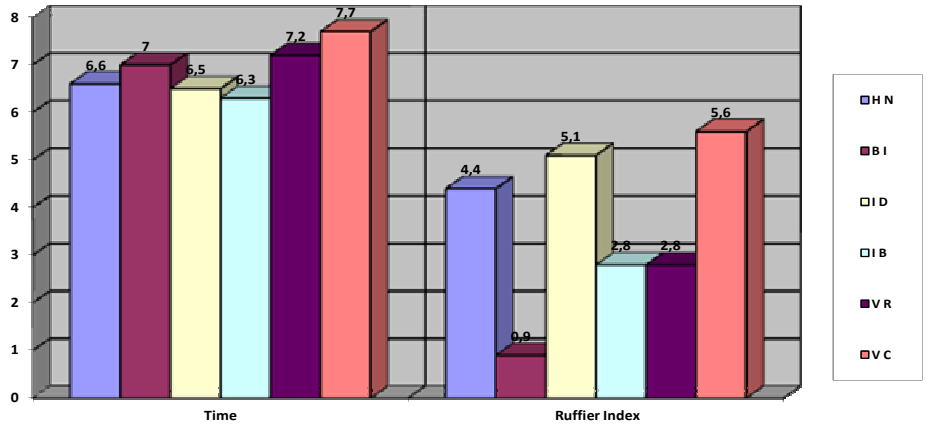

Figure 1. Heart rate after speed running and times

Table 3. Heart rate before and after the game of basketball and the value of the Ruffier Index

Name and surname	P1	P2	P3	Ruffier Index
Hăineală Norbert	74	120	80	5.6
Bâră Ionuț	66	106	68	3.8
Ianoşi Dragoş	78	125	80	5.7
Ianoşi Bogdan	72	98	72	2.8
Vodă Ramona	72	94	70	2.2
Voica Cristina	74	114	82	5.2

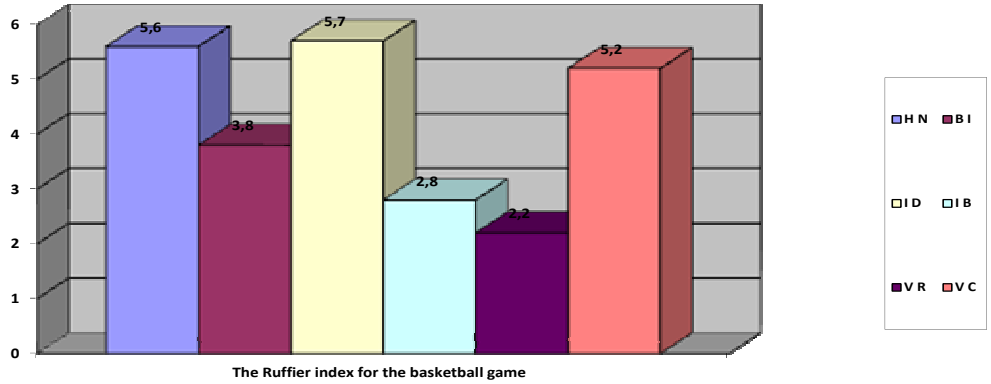

Figure 2. The Ruffier Index

Table 4. Heart rate before and after the strength exercises and the value of the Ruffier Index

Name and surname	P1	P2	P3	Ruffier index
Hăineală Norbert	66	110	74	4.8
Bâră Ionuț	64	90	64	2.0
Ianoşi Dragoş	68	110	74	4.6
Ianoşi Bogdan	64	98	62	2.6
Vodă Ramona	68	94	70	2.6
Voica Cristina	68	104	74	4.0

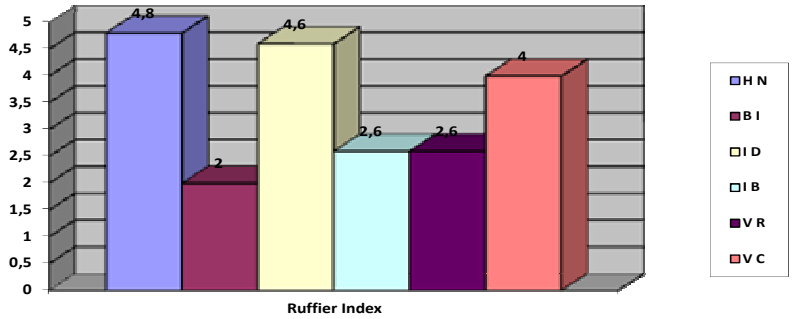

Figure 3. The Ruffier Index

Comparing the results obtained, one can say that the Ruffier Index values depends on the nature of the sport, even for the very well trained athletes.

For instance, the student Ionuț Bâră has a better index value for the speed running than for the basketball game.

The average of the Ruffier Index values for the trained athletes involved in speed running is 2.16, while for the untrained athletes is 5.03, the difference between them is 2.87.

The average of the Ruffier Index values for the trained athletes involved in the basketball game is 2.93,

while for the untrained athletes is 5.5, the difference between them is 2.57.

The average of the Ruffier Index values for the trained athletes involved in strength exercises is 2.4, while for the untrained athletes is 4.46, the difference between them is 2.06.

After the results, one can notice that the athletes had better Ruffier Index values than the untrained students, with the exception of Ionuț Bâră at the basketball game, where he obtained a middle Ruffier index value.

CONCLUSIONS

We conclude that it is good for the students to practice sports in order to improve their health and harmonious physical development.

The untrained students obtained a middle Ruffier index value for all three types of exercises.

There can also be noticed that, from the tables, the weight of the athletes is smaller in relation to their height, compared to those that are untrained (except for PE classes), who have a bigger body weight in relation to their height.

REFERENCES:

1. **Cordun M. – „Kinetologie medicală" – Editura AXA – Bucureşti 1999.**
2. **Cordun Mariana – „Kinantropometri"e Editura CD Press – Bucureşti – 2009**
3. **Dragnea A.- „Măsurarea şi evaluare în educaţie fizică şi sport" Editura Sport-Turism, Bucureşti 1984**
4. **Epuran M. – „Metodologia cercetării activităţilor corporale" FEST, Bucureşti 200.**
5. **Goldcher A. Nataf E. – „Podologie du sportif" – Paris Masson – 2002.**
6. **Mano R. - „Les Bases de l'Entrainement Sportif" Revue EPS, Paris 1994**
7. **Mihăilescu V. - „Antropologie, 5 introduceri" Editura Polirom, Bucureşti 2007**
8. **Niculescu M. - „Metodologia cercetării ştiinţifice în educaţie fizică şi sport" Editura BRN, Bucureşti 2003**
9. **Tudor V. - „Măsurare şi evaluare în educaţie fizică şi sport" Editura Alfa, Bucureşti 2005**

SURVEILLANCE DU RYTHME CARDIAQUE A DES ETUDIANTS FORMES ET NON FORMES DE L'EFFORT PHYSIQUE

Resume:

Au cours d'un exercice physique, les paramètres cardiaques (volume systolique, le débit cardiaque, fréquence cardiaque et la pression artérielle) des changements en fonction de la quantité d'oxygène (VO2) nécessaire par le corps humain.

L'évaluation cardio-vasculaire vise l'état morphologique et fonctionnelle de l'appareil cardio-vasculaire, dans le repos ou la situation dynamique. Les résultats de cette évaluation sont différents, que le sujet est un athlète ou une personne qui ne fait pas le sport en général.

Il est bon de connaître ces particularités morphologiques et fonctionnelles de ne pas considérer les pathologique.

Les paramètres surveillés sont nombreux et leur interprétation nécessite un personnel spécialisé.

***Mots clés**: l'effort, la fréquence cardiaque, la capacité motrical.*

THE COACH'S ROLE AND EFFICIENCY IN THE MANAGEMENT OF THE 9-METER HANDBALL PLAYERS' TRAINING (JUN. I)

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Abstract.

The present work intends to approach, present and show that an efficient management and scientific management methods applied in the training of handball players (in this case, 9-meter players) can lead to the improvement of their efficiency.

***Key words:** Handball, coach, visual information, memory, observation sheet.*

INTRODUCTION

This study presents a few important aspects related to the management of training (here, that of the 9-m players), a study that we hope to be useful for the coaches working in performance sports and for those who train children and juniors.