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**REVUE DES NIVEAUX DE LEADERSHIP DES  
EMPLOYES QUI TRAVAILLENT AU CENTRE**

**DE COORDINATION DES JEUX MONDIAUX  
UNIVERSITAIRES D'HIVER**

**Résumé**

*Le but de cette recherche est de déterminer les dimensions du leadership du personnel qui travaillent dans le comité d'organisation des jeux mondiaux d'hiver de l'Université et de 25 pour savoir si cette dimension est différente en fonction des caractéristiques démographiques. Tout au long de la recherche, afin d'obtenir des données concernant les comportements de leadership », à l'échelle pour décrire les comportements de leadership" a été appliqué à 223 personnes, dont 79 étaient de sexe féminin et 144 de sexe masculin. Dans la recherche, l'analyse de fréquence a été utilisé pour déterminer les caractéristiques démographiques, les statistiques descriptives pour trouver la moyenne générale des participants; t-test pour déterminer les niveaux de leadership fondée sur le sexe, la statue et l'état matrimonial dans les groupes indépendants et unilatérale de la variance (Anova ) analyse pour déterminer les niveaux de leadership basées sur le level.It l'éducation a été conclu que les employés de sexe masculin ont des moyennes plus élevées concernant les comportements de leadership dans les deux dimensions par rapport aux femmes. Des différences considérables ont été pas vu dans les comparaisons de comportements de leadership et la statue, l'état matrimonial et le sexe ( $p > 0,05$ ).*

**Mots clés:** Leadership, Le comportement Jeux d'hiver.

**AQUA-GYM – A NEW METHOD OF IMPROVING PHYSICAL  
CAPACITY**

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**Abstract:**

*Aqua-gym represents an innovative method of motility education technology , can be adapted to particularities specific to age and preparation level, as well as to individual and group preferences, and contributes to the optimal modification of behavioral and physical capacities.*

*In view of the research we have developed and applied a questionnaire through which we wanted to emphasize the effectiveness, the attractiveness, the benefits and the preferences for the exercises specific to aquagym.*

*The research reveals that the results of aqua-gym are complex and the motivation of the people who chose to practice it are different depending on the effects and attractiveness of different types of specific exercises.*

**Key words:** Aqua-gym, methods, educational technology, preferences, motility behavior, recovery.

## INTRODUCTION

Biological adjustment in sport represents the body's answer to a physical or psychological input, which comes out as a modification of organs and of relevant body functions. [2]

Optimizing the training process is possible when teaching, learning and evaluation are interdependent and when these activities create significant changes in the personality structure of educational agents, in general, and of sportsmen or sportswomen, in particular. [1]

In order to allow maximum performance, fatigue limits have to be constantly removed during sportive activity. Effort and recuperation are interconnected, interdependent and they interrelate. [4]

For the purpose of engraining the child to continuously practice physical exercise, educators have to consider the following principles: [3]

- respecting every aspect of human personality;
  - soliciting everyone's capacity to take care of self, to evaluate possibilities and to develop various aspects of own personality in the spirit of self respect and respect to others; supporting sport; practicing as recreation, without neglecting the rigor of the didactical process and taking into consideration the child's needs;
  - developing pedagogies of success, which does not imply easy accomplishment nor failure with heavy effects;
  - suggesting a wide range of individual and group activities;
- permission to everyone to choose according to taste, necessity and own pleasure.

## THEORETICAL BACKGROUND

The psychical activity of those playing handball is fully solicited: cognitive functions regarding circumstance perception and choosing the best action methods for attack or defense; determination and its qualities to combat fatigue and negative efforts or emotions; affection tightly connected to practical or imagined situations, concerning both game satisfaction and acquired success, and fear of failure or bitterness towards the opponent's superiority. [4]

Effort in handball is characterized through an alternation of efforts of sub maximal intensity, depending on the practical game conditions, with efforts of maximal or medium intensity and even with breaks. [2]

Aqua-gym can be considered the sum of various exercises, implying precise and efficient moves, within an environment where gravity is reduced to a minimum, thus avoiding trauma which can appear by practicing other physical activities. Aqua-gym represents an important form of fitness,

taking into consideration multiple formative and health aspects, by combining the positive effects of water exercise and adapted to music rhythms.

## PROBLEM SOLUTION

### Research purpose and hypothesis

The purpose of the research was to identify preferences and motivations to practice various aqua-gym exercises with the intention to optimize the subjects' motility capacity.

In order to set the hypothesis of the research we started from the assumption that identifying the options of the subjects interviewed can contribute to optimizing the motility activity specific to aqua-gym.

## MEANS AND TOOLS

The field activity had as objective the interviewing of junior I female handball players included in the test sample. The research population is represented by two teams of handball players, both from Brasov, aged 17-32. The applied questionnaire is administrated to people who, as a result of prior exploratory research, mentioned that they practice this type of activity both as a recovery and as a training method, in the view of optimizing effort capacity.

Question no. 1. Would you like to take part in a study regarding the effects of aqua-gym? Yes/No

Question no. 2. On a scale from 1 to 10, how attractive do you find aqua-gym courses?

Question no. 3. Which are the first three reasons for choosing this type of activity?

- Muscle tone
- Psychological relaxation
- Effort recovery
- Mobility increase
- Health improvement
- Weight loss
- Body shaping
- Trauma recovery
- Lack of discomfort signs during effort (transpiration, excessive heat)
- Other reasons.

Question no. 4. Which three benefits do you consider to gain from aqua-gym? [5]

- Effort capacity increase by defying water resistance with means specific to fitness;
- By floating exploitation, the spine and articulations relax;
- Reducing gravity favors muscular relaxation and neuromuscular axes are less excited;
- Weight loss;
- Muscle tone without the risk of trauma or of incorrect position;
- Improvement of balance perception;
- Increase of muscular grace;
- Quantity reduction of lactic acid which accumulates during intense aerobic trainings;
- Stimulation of blood circulation;

- Respiratory capacity increase;
- Efficient training of cardio-vascular system;
- Psychological relaxation due to the "placebo" water effect;
- Water exercise compared to those on the ground consume with 1-2 more kcal/min, at the same intensity;
- Hydrostatic pressure acts on articulations, making them stable;
- The massage the water executes on the body has a tone and relaxing effect;
- Other reasons.

Question no. 5. On a scale from 1 to 3 (where 1 is the least important and 3 the most important), which of the following do you consider to be the most significant for you: weight loss, muscle tone or psychical relaxation?

Question no. 6. Do you think that the diversity of the means of action used during class is:

- Efficient
- Not efficient?

Question no. 7. Do you consider the class intensity as being:

- Low
- Average
- High?

Question no. 8. Do you think that the language used is:

- Accessible
- Not accessible?

Question no. 9. How long have you been frequenting aqua-gym classes?

Question no. 10. Grade the following methodical procedures from 6 to 10 according to attractiveness level:

**Table 1.** Variants for question no. 10

Methodical procedures	Attractiveness level
Aqua-gym pliometry	
Stretching	
Jogging	
Adapted swimming	
Circuit	
Exercises with weights	

Question no. 11. Grade the following methodical procedures from 1 to 10 (where 1 is the least important, 10 very important) according to efficiency:

**Table 2.** Variants for question no. 11

Methodical procedures	Efficiency level
Aqua-gym pliometry	
Stretching	
Jogging	
Adapted swimming	
Circuit	
Exercises with weights	

Question no. 12. Do you consider the number of repeated exercises according to muscular groups to be:

- Efficient
- Not efficient?

### SAMPLE SIZE DETERMINATION

In order to determinate the sample size, we used the following formula:

$$n = \frac{z^2 \cdot p \cdot q}{E^2}$$

Where n=sample size, z<sup>2</sup>=square of z coefficient, adequate to the trust level,

p=percent estimation in case of success,

q=1-p=percent estimation in case of lack of success,

E<sup>2</sup>=square of error level expressed as percent.

We considered an error of ± 3% and the trust interval of 95% for which z has a value of 1.96.

Without knowing the proportion of those responding Yes or No, we considered p=q=50%. Therefore, the sample size will be:

$$n = \frac{1.96^2 \cdot 50 \cdot 50}{3^2} = 1067 \text{ persons.}$$

Taking into account the educational aspect of this research, as well as the financial reasons, the sample size was not taken into consideration and was therefore reduced to 36 subjects. In this case, the error is:

$$E = \sqrt{\frac{z^2 \cdot p \cdot q}{n}} = \sqrt{\frac{1.96^2 \cdot 50 \cdot 50}{50}} = \pm 13.85$$

The rapport between the sample size and the researched population is:

$$\frac{n}{N} = \frac{50}{81800} = 0.00061$$

The sample represents 0.00061% of the size of the referred population, being under the value of 3%, therefore the sample size does not need correction.

### RESULTS AND INTERPRETATION

Statistics of the relevant questions and of the characterization questions of the subjects.

Question no.1. Would you like to take part in a study regarding the effects of aqua-gym?

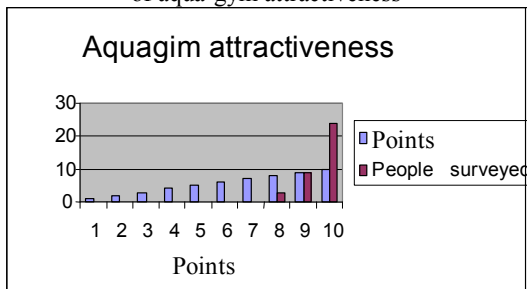
All unanimous answers were Yes, which means that the entire selected sample participated in this study, with a percentage of 100 units.

Question no. 2. On a scale from 1 to 10 how attractive do you find aqua-gym courses?

**Table 3.** Answers question no. 2.

Grade	1	2	3	4	5	6	7	8	9	10
No. of persons	0	0	0	0	0	0	0	3	9	24

**Graphic 1.** Graphic representation of aqua-gym attractiveness



For junior I handball players, from a total of 36, 24 gave the maximum grade, which represents 66,6%, 9 sportswomen graded 9, which represents 25%, and the rest of 3 persons appreciated the activity with 8, representing 8.4%.

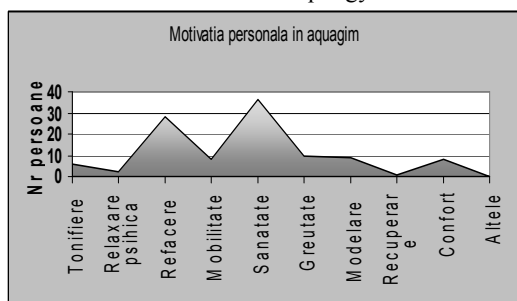
This indicates that for junior I handball players aqua-gym classes are very attractive.

Question no. 3. Which are the first three reasons for choosing this type of activity?

**Table 4.** Answers question no. 3.

Effect	Option
Muscle tone	6
Psychical relaxation	2
Effort recovery	28
Mobility increase	8
Health improvement	36
Weight loss	10
Body shaping	9
Trauma recovery	1
Lack of discomfort signs during effort	8
Others	0

**Graphic 2.** Graphic representation of personal motivation for aqua-gym



From the collected data appears that the majority made an option for health improvement, due to the beneficial effects of the environment in which the activity takes place. Psychical relaxation registered a low score, namely two options, due to the age of the sportswomen, the accent not being on the psychical aspect. Also a low score was obtained on trauma recovery and this is due to the fact that only one player needed it. In addition to that, we discovered that effort recovery has a very good score

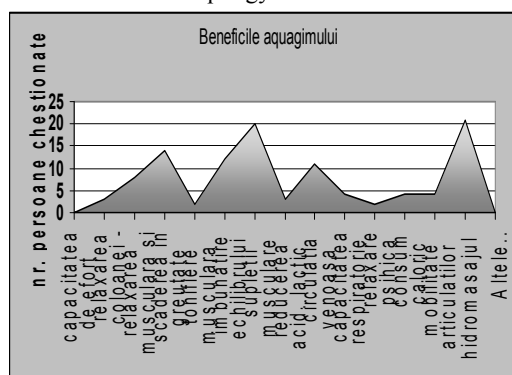
(28 units), this also constituting one of the factors taken into account by aqua-gym.

Question no. 4. Which three benefits do you consider to gain from aqua-gym?

**Table 5.** Answers question no. 4.

Benefit	Count
Effort capacity increase	0
Spine and articulations relaxation	3
Muscular and neuromuscular relaxation	8
Weight loss	14
Muscle tone	2
Balance perception improvement	12
Increase of muscular grace	20
Quantity reduction of lactic acid	3
Stimulation of blood circulation	11
Respiratory capacity increase	4
Psychical relaxation	2
Increased calory consumption	4
Mobility of articulations	4
Hydromassage	21
Others	0

**Graphic 3.** Graphic representation of aqua-gym benefits



The highest score for this question is held by hydro massage and increase of muscular grace.

Question no. 5. On a scale from 1 to 3 (where 1 is the least important and 3 the most important), which of the following do you consider to be the most significant for you: weight loss, muscle tone or psychical relaxation?

**Table 6.** Answers question no. 5.

Aspects taken into consideration	Points	Absolute frequencies	Relative frequencies	%
Weight loss	1	9	0,25	25,0
	2	16	0,44	44,4
	3	11	0,31	30,6
	Total	36	1,00	100,0
Muscle tone	1	21	0,58	58,3
	2	10	0,28	27,8
	3	5	0,14	13,9
	Total	36	1,00	100,0
Effort	1	6	0,17	16,7

recovery	2	10	0,28	27,8
	3	20	0,56	55,6
	Total	36	1,00	100,0

Average scores:

Weight loss:  $1*9+2*16+3*11 = 74$

Muscle tone:  $1*21+2*10+3*5 = 56$

Effort recovery:  $1*6+2*10+3*20 = 86$

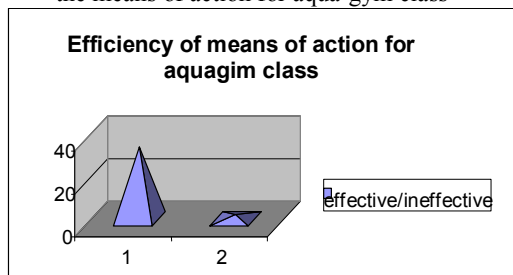
In conclusion, effort recovery is one of the most important benefits in practicing aqua-gym, with an average score of 86 units.

Question no. 6. Do you think that the diversity of the means of action used during class is efficient/not efficient?

Table 7. Answers question no. 6.

Answers	Absolute frequencies	Relative frequencies	%
Efficient	34	0,94	94%
Not efficient	2	0,06	6%
Total	36	1	100%

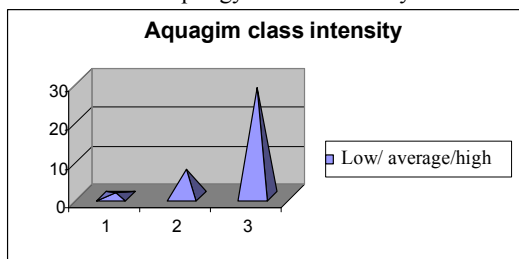
Graphic 4. Graphic representation of the efficiency of the means of action for aqua-gym class



Question no. 7. Do you consider the class intensity as being: low/average/high? Table 8. Answers question no. 7.

Answers	Absolute frequencies	Relative frequencies	%
Low	1	0,03	2,8%
Average	7	0,19	19,4%
High	28	0,78	77,8%
Total	36	1	100%

Graphic 5. Graphic representation of the aqua-gym class intensity



Question no. 8. Do you think that the language used is: accessible/not accessible?

Table 9. Answers question no. 8.

Answers	Absolute frequencies	Relative frequencies	%
Accessible	36	1,00	100%
Not accessible	0	0	0%
Total	36	1	100%

The language of the aqua-gym program is specific to basic gymnastics and with the help of examples given by the trainer sitting on the margin of the pool, language combines with the visual image of the exercise. We consider the 100% relevant, especially because the players have already a sport based terminology which makes their appreciation real.

Question no. 9. How long have you been frequenting aqua-gym classes?

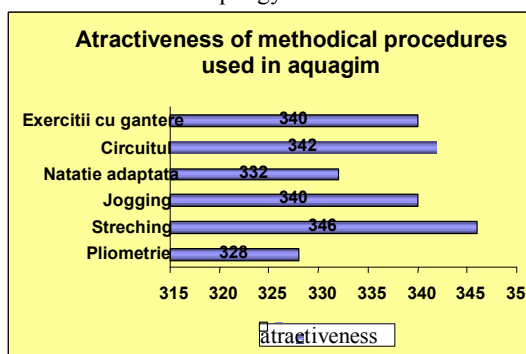
All players responded that they have been practicing aqua-gym for 4 months, one hour, two times per week.

Question no. 10. Grade the following methodical procedures from 6 to 10, according to attractiveness level

Table 10. Answers question no. 10.

Methodical procedures	Attractiveness level
Aqua-gym pliometry	328
Stretching	346
Jogging	340
Adapted swimming	332
Circuit	342
Exercises with weights	340

Graphic 6. Graphic representation of the attractiveness of methodical procedures used in aqua-gym classes



**Table 11.** Attractiveness grades

Attractiveness grades	F.A.	F.R.	%
6	8	0,037	3,7%
7	8	0,037	3,7%
8	18	0,084	8,4%
9	30	0,140	14,0%
10	151	0,702	70,2%
Total	215	1,000	100

The average for appreciation of aqua-gym program attractiveness is:

$$\frac{1 \cdot 8 + 2 \cdot 8 + 3 \cdot 18 + 4 \cdot 30 + 5 \cdot 151}{215}$$

$$\text{Variance: } S^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}$$

$$S^2 = \frac{8(1-0,7)^2 + 8(2-0,7)^2 + 18(3-0,7)^2 + 30(4-0,7)^2 + 151(5-0,7)^2}{207} = 1,59$$

$$\text{Standard deviation } S = \sqrt{S^2} = 0,128$$

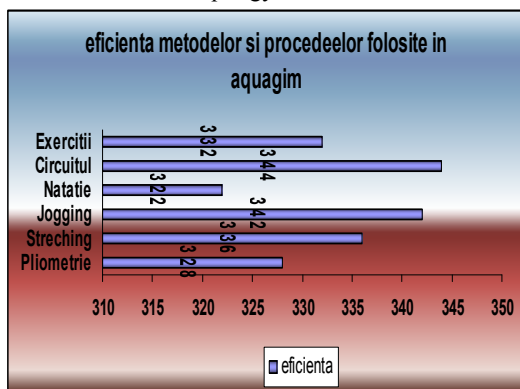
In conclusion, the junior I handball players are highly attracted to aqua-gym programs.

Question no. 11. Grade the following methodical procedures from 1 to 10 (where 1 is the least important, 10 is very important), according to efficiency:

**Table 12.** Answers question no. 11.

Methodical procedures	Efficiency level
Aqua-gym pliometry	328
Stretching	336
Jogging	342
Adapted swimming	322
Circuit	344
Exercises with weights	332

**Graphic.7.** Graphic representation of the efficiency of aqua-gym methods



After analyzing the questionnaires, the most efficient proceeding is the method of the circuit, which has a very well defined structure in aqua-gym, after that water jogging distinguished, which implies running and various steps specific to athletics.

Question no. 12. Do you consider the number of repeated exercises according to muscular groups to be efficient/not efficient?

**Table 13.** Answers question no. 12.

Answers	Absolute frequencies	Relative frequencies	%
Efficient	36	1,00	100%
Not efficient	0	0	0%
Total	36	1	100%

All answers were affirmative and we can thus consider that the measuring exercise based on muscular groups is efficient and accessible.

### CONCLUSIONS

The hypothesis of the research was confirmed. The subjects' preferences and motivations to practice exercises specific to aqua-gym are varied and determined by personal needs.

The application of the questionnaire led to becoming aware of some definite and motivational aspects of practicing aqua-gym. The subjects' behavior was improved, as a result of delimitation made between personal and group options.

We consider that the diversity of action technology specific to aqua-gym, adjusted to individual and group particularities, will determine optimization regarding motility capacity and effort recovery. The increase of the attractiveness level by using various means and educational materials during aqua-gym programs will enable class optimization, active participation of the subjects and diversity regarding preferences and motivations.

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**L'AQUAGIM UNE NEUVE METHODE POUR AMELIORATION DE LA CAPACITE PHISIQUE**  
Résumé

*L'aquagim reprezante une neuve methode de la tehnologie d'education motrice en pouvent d'etre adaptée on particuléments d'âge et an niveau de préparation, ainsi que aux préférences individuelles et de groupe en contribueant an modification optime, des comportements et des capacités phisiques.*

*An cadre de recherche j'ai elaboré et j'ai apliqué un questionnaire dans quel j'ai desiré o distinguer l'efficacité, le degré d'attraction, les bénéfices et les préférences d'aquagim.*

*La recherche releve le fait que les résultats de pratiquer l'aquagim sont complexes, mais motivations de praticiens sont différents en fonction des effets et d'attraction des différentes types d'exercices specifiques.*

**Mats clef:** *L'aquagim, methode, technologie d'education, préférence, 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 (VO<sub>2</sub>) 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 (VO<sub>2</sub>) 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