



## ANALYSIS OF THE COMPETITION'S EFFORT TO BUILD THE ROWING ERGOMETER

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### Abstract

*Purpose.* Thanks to knowledge increasingly deeper phenomena and processes occurring in the practice of sport has highlighted the need for a more objective control over the evolution of the athlete during training and competition. Such specialists in the field of sports have introduced as means of preparation and control of the rowing simulators. Due to the introduction of the rowing on simulation, I get continuity of rowing training throughout the entire cycle, and thus the role of specific preparation used during cold weather.

*Methods.* The methods used in the study are: the study of literature, observation method, method statistics.

*Results.* Ergometer in competitions sportsmen introduction has appellate on performance through: reduction of learning time; analysis of possibilities of multiple plans in terms of effort, can detect and correct any mistakes; the possibility of testing effort capacity; increasing the capacity of forecasting of the behavior of the athlete in competition.

The contest on the Ergometer is an indicator of the level of physical training in that effort can be realized under conditions of stable and steady.

*Conclusions.* The ergometer has revolutionized the training of athletes, allowing training objectification by measuring the work done, do the times on different distances used in training, tempo de vâslore, distances traveled, calories consumed, the legislature made.

He creates the conditions of laying in rowing, and can also improve the athletes' equipment.

Ergometer creates a new dimension to your training, by extending the periods of rowing with a certain repercure in the outcome of the competition.

*Key words:* rowing, exercise, sports.

### Introduction.

In rowing specific physical training-oriented content, in particular towards the development of resistance and get the workforces (Florescu, et al. 1983). The means by which this is achieved are mainly water and as an exercise in specific tempo on rowing. In rowing, the resistance is ensured by the functional possibilities of the human body, the activity of the cerebral cortex, the ability of all systems and organs. This quality so complex motor requires a special physical training throughout the training cycle. It expresses the time limit during which can be continued effort of a certain intensity (Gagea, 2002).

Dominant character of rowing resistance requires an orientation towards educating especially the physical qualities (Neder, 2012). Specialized training for development of resistance (Nicu 1990) is causing a negative transfer speed and a positive for force. Therefore the education of labor resolves to some extent through resistance training. Sports performance training is as we know an applicant activity, requiring many hours of training and even sacrifices on the part of the athlete. The volume and intensity of continuous increase, while athletes repeated the exercises several times. To achieve internationally competitive

performance (Dospinescu, 2006), training volume must pass the threshold of 1000 hours of training per year.

For testing and training athletes who practice canoeing are used extensively for rowing ergometer such as "Concept II".

Introduction of ergometer in rowing has many appellate over it, a few of which are the most important:

- reducing the time for learning;
- possibilities of analysis of the evolution of multiple plans in terms of effort, is very important in rowing, where, naturally there are no such conditions only rarely;
- determining the gaps such as motor (force blow, resistance level, etc.);
- possibility of detection and correction of technical mistakes;
- the possibility of testing effort capacity;
- establishing dependencies, the relationships between behaviour of rowing and motile manifestation to various other plans (physiological, biochemical);
- increase the capacity of forecasting the behavior of rowing in the contest;

Currently, an Ergometer is used in three directions, into three spheres of activity, all extremely

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important, namely:

1. Ergometer is used as a means of preparing the rowing. At the beginning of his appearance was used in the preparation of rowing, however, it can be said, in a limited way, being used only in the preparatory period, when adverse weather conditions is not allowed as per.

Of all the means used in the preparatory period, ergometer is the most important, because it can successfully substitute as in craft, due to the similarities with them, both on the driving action plan, thus allowing a good measure of technical achievement, and by its similarities to plane the effort, allowing rowing ergometer in all alurile and all intensities used. Thus, instead of general exercise (treadmill) ergometer offers the possibility of training with special training exercises, exercises which have effects similar to those specific workout.

During the summer ergometer is used as a means of preparing just in case weather conditions (rain, big waves) does not allow water exit, the rest is just dialled in specific training means (as in boat) and the means of physical training (strength and treadmill).

2. Ergometer is used as motor testing apparatus. Pedagogical supervision in sport is first and foremost a reliable information concerning the preparation of the athletes in the different stages.

Scientific management training is closely related to the continuous monitoring of the level of training of the athletes. Samples in small craft (simple) is rowing one of the most enlightening in progress tests, test preparation which gives full performance capacity measure (driving specific capabilities and technical capacity) of rowing.

Often, however, the variations in hydrographic and meteorological conditions make it difficult or even impossible to determine the individual's progress on the basis of simple cabling in the times. From this point of view is a ergometer tool to test the stable, less sensitive to the issues of technique, providing ideal conditions for testing identical every time. If attendance at the small craft is on checks the test to determine the ability of fundamental performance in rowing, ergometer is an ideal way to test the ability of rowing to generate power through rowing.

3. Ergometer is used in the control of sports rowing-medical. This is possible due to the fact that the rowing machine is a device for measuring the work and

discipline that deals with the determination of Physic (muscle) by measuring the work done, is called ergometrie.

This camera has revolutionized the preparation rowing, allowing training objectification by measuring the work done, take on different periods are used in distance education, tempoului of rowing, distances traveled, calories consumed, to power. It creates conditions for studying the Biomechanics of rowing, and can also improve rowing technique.

The use of ergometer creates a new dimension on his training through training specific (Platonov, 1991) to lengthen (rowing) with some analysis in getting the results of the competitions.

The most important rowing machine used by most athletes in the world you are Ergometer type Concept.

The ergometer is a machine that simulates the action of rowing with the purpose of training or practicing rowing. Device for measuring the work, ergometer is a device that measures the amount of work done and set to show the energy generated. This study aims to analyze the physical effort and evolution in the rowing ergometer contest's junior, to have as objective control over the evolution of the athlete during training and competition (Epuran, 2005). Thanks to knowledge increasingly deeper phenomena and processes occurring in the practice of sport has highlighted the need for a more objective control over the evolution of the athlete during training and competition. So the sport's professionals were introduced as a means of training simulators and rowing machines.

Ergometer is a modular system of auxiliary devices and equipment for recording and study of movement education and body muscle control by visual feedback and nevizual.

The facilities of the system:

1. individualization of movements studied by attaching specific accessories;
2. settlement upon the resistance movement;
3. display the display during exercise of a graph template to which the subject contrasts with the normal at each movement;
4. store the missing information when forwarding individual files;
5. the possibility of processing information and interpretation of the evolution over time.



**Figure 1. Ergometer Display row.**

Ergometer-type Concept shows one of the important functions for analyzing the motion of rowing-force curve.

This software is the opportunity to build a curve of inside standard equipment of each exercise. Can be helpful just the coaches and the rowing elite or beginners.

Labor curve is a graphical application of labour reprezentare during rowing. Show variation in strength during the use of the legs, back and arms during the transition. A smoother curve shape shows a smoother implementation of the workforce. The area under the curve is higher, the coup that results will be better.

During execution the athlete can follow the on-screen values, optional digital or analogue form. At the end of a benefit showing a screen with synthetic average values of all parameters. Ergometer is a machine that simulates the action of rowing with the purpose of training or practicing rowing. Device for measuring the work, ergometer is a device that measures the amount of work done and set to show the energy generated. The word derives from the Greek exercise "ergon" meaning work and "metron", which means, so "Ergometer".

The monitor displays the following data:

Watts-Watts are a measure of force. If you choose Watts as the unit of measurement you will see how much power you produce. This measure helps to maintain the constancy with which rowing power.

And in the case of speed – the speed is expressed in units of time and looks after every time you kick make rowing on the 500 metres.

Calories – this unit shows the rate at which you burn calories at every blow. Every human being has a proper metabolism, and some are more efficient than others. In rowing, caloric data cannot be only approximated and assumed that the athlete weighs 80 kg.

The growth performance and the need for increased training efforts requires a high standard of quality, selection, which constitutes a guarantee to achieve superior performance. Advancement of knowledge relating to investigations, psychological, biometric training morphological, physiological, as well as new knowledge in the methodology of the training are very important tools for sports training and determination of its objectives. The selection, along with the advancement of knowledge concerning the physiology of physical exertion and the sport-specific, as well as new knowledge in the methodology of the training are very important tools for sports training and determination of its objectives. Today it offers real value and information managers in practical work, with which you can make objective judgments at all stages of selection. There is no perfect test systems and universally valid because every athlete is an individual, and these individuals together, instead, form a team of unquestionable value. The coach needs to know how, what and how to test for each student.

**Methods**

The methods used in the study are: the study of literature, observation method, method statistics and the test method ergometer.

**Results**

Introduction of ergometer in rowing has appellate competitions over performance, by reducing the time of learning; analysis of possibilities of plans in terms of effort, can detect and correct any mistakes; the possibility of testing effort capacity; increase the capacity of forecasting the behavior of rowing.

In this study did analyze the physical effort of junior rowing Romania Cup competition, competition on an Ergometer, which took place in Snagov, at 16.03.2013. The sample is analyzed: 1 junior male individual, final race

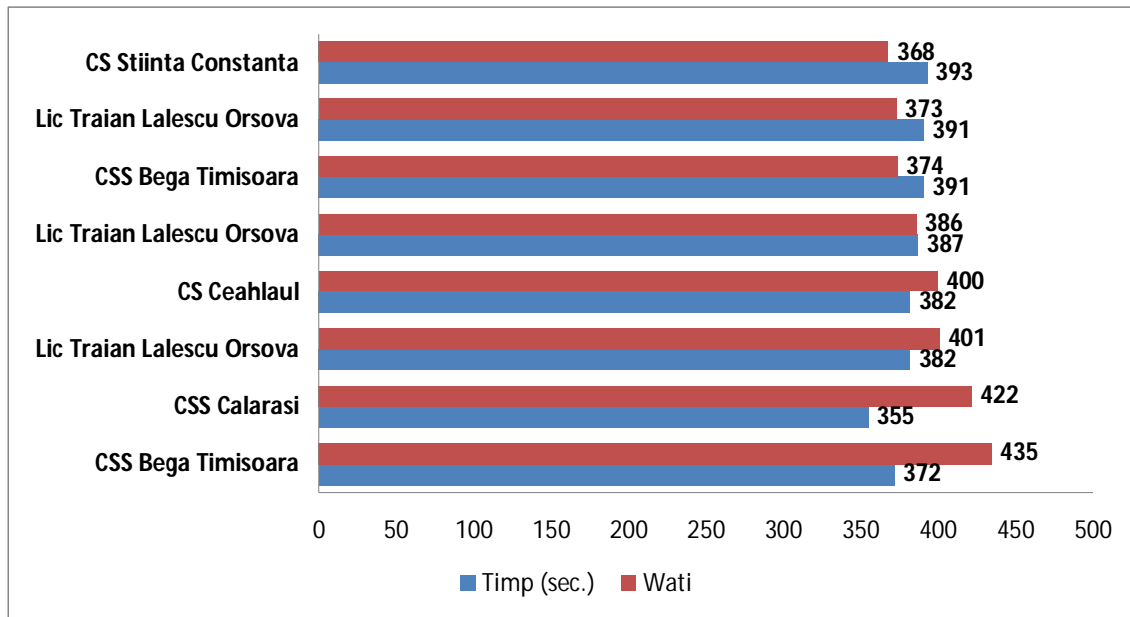
**Tabel 1. The results obtained in the final race of the first eight athletes**

No.	Sports club	year of birth	Time min/sec.	power Watt	weight	W/kg,corp
1	CSS Bega Timisoara	1995	06:12.10/372.0	435	106	4,103773

2	CSS Calarasi	1995	06:15.80/355.0	422	98	4,306122
	H.S. Traian Lalescu					
3	Orsova	1996	06:22.40/382.0	401	95	4,221052
4	CS Ceahlraul	1996	06:22.70/382.0	400	97	4,123711
	H.S. Traian Lalescu					
5	Orsova	1995	06:27.20/387.0	386	89	4,337078
6	CSS Bega Timisoara	1995	06:31.40/391.0	374	96	3,895833
	H.S. Traian Lalescu					
7	Orsova	1996	06:31.60/391.0	373	98	3,806122
8	CS Stiinta Constanta	1995	06:33.40/393.0	368	96	3,833333
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	

Table 1 shows the results of the first eight finishers in the final round of the athletes on the rowing machine and the times make in minutes/seconds. The power with which they competed the athletes is expressed in Watts. Differentiate athletes was done according to time and Watts. Column 1 represents the sports club

which is contracted by the athlete, column 2 represents the year of birth of the athlete, column 3 represent the time recorded on the distance of 2000 at an Ergometer, column 4 means power expressed in watts on the same distance.



**Figure 2. A graphical representation of the evolution of athletes**

Figure 2 shows the difference of value that every sportsperson who competed in this competition.

### Discussions

In this study we observe the evolution of each athlete's time over the 2000 m and the evolution of the rowing at the beginning of the preparation. We can appreciate that their results are good. Because the craft crew cannot appreciate the objective evolution of an individual, we will analyze these tables just to have a better overview, without claiming to be able to compare their developments with the rowing machine rowing 's.

All athletes know, during their work, certain growths, quality of different values and different levels of preparation; only that, for a proper test, it takes such a rating system enabling the development stage is the son, and of how it has progressed at its own pace, until immediately prior to testing. Often, this is not very easy to achieve. Until finally, observing individual developments, together with a series of objective tests will show, most likely the truth. Ultimately, the most important factors in the discovery of young talents are either those who plays in the achievement of the performance at the senior level, either those that are



essential for high performance, though their chances for improvement, over time, are quite limited.

Unlike other sports, rowing specialization cannot be practiced only after acquiring the *vâslitului* technique.

But this appropriation may not be undertaken anyway, but at a higher quality level as well as allowing the use of all capabilities of the athlete in the driving goal of the training: the fastest advancement of row.

Global performance is, at the present time, unthinkable without the unity of physical and technical training, constant improvement of materials. As such, technical training as well as other factors is decisive in achieving performance, it must promote a maximum yield.

Only proper technique allows an efficient and economic movements. Just forming a stereotype correctly, tailored to individual circumstances, can lead to the formation of a personal style that allows full exploitation of consummate ability of athlete performance.

We must remember that in rowing, where, in the competition, providing a sustained effort of great intensity the whole way, the technique must be the same at any time. It should therefore be strengthened, "strengthened" in the workout amid a heavy fatigue.

Sincronic and accuracy improve by training must be sought in any moment the sobriety movement.

This is an economic factor, because we see many oarsmen doing gymnastics with shoulders, pulling stray movements without any result over the coup, but that, on the contrary, it is absolutely unnecessary energy expenditure for the oarsmen.

Any mistake, no matter how small, gathered with blow blow increases in importance resulting in loss of precious seconds.

Also in the process of training these mistakes will constitute as many obstacles and difficulties in the preparation stages of athletes' performance and high performance.

In conclusion, we can detach the idea that initiation into rowing technique is a complex process of great importance which should be planned on the basis of a well-established pattern which leads to better-informed efficiently through the formation of an athletes ideo motor fair representation and of a stereotype to duplicate as closely over the appropriated.

The data collected provides us with a broad picture of the situation, namely that the lack of training and exercise control (Dragnea, et al., 2002) on the tracks of the last period and said the word. Athletes have had 30 days to open training camp at the mountain (Piatra Arsa). Both workouts and exercise control tracks appreciates

much better work than group workouts, especially when we are dealing with issues of self-determination and emulation of the athletes.

So we can draw a first conclusion: Ergometrul looks better individual performance in the athlete's workout than craft.

If the water workouts can hide the lack of dedication and involvement in the effort, blaming atmospheric conditions, the partner or the boat, rowing machine, we cannot help but note the goal value and the potential of the moment. However, we must recognize that the training time is limited and we cannot afford not to insist on training in rowing crews (Radut, et al, 1976) that we present to the competitions. So coach appreciation remains as depending on all factors involved to choose the optimum ratio between the rowing workouts and exercise ones.

In table 1, column 4 means the weight of the athletes at the time of execution of the track. Column 5 is "slip index" (Watt/kg body), which reported on the accomplished provides an eloquent over the net's potential. It is known that an athlete with big table will perform better at rowing machine, but on the water extra pounds will help him at the boat slip.

## Conclusions

After the effort of junior athletes to the competition, we can say that they behaved well, they managed to classify in front of fellow athletes from clubs. Practical-applicative part is the most important way to achieve this goal. When you identify a correlation between the results from Ergometer and competition performance, then ergometer will be used as a means of providing training and State of the art rowing and its efficiency. If we talk about the training of the rowing, we are not talking only of weightlifting, but by all means used. Working with dumbbells is beneficial insofar as technically correct executed and does not cause trauma. Maximum live load, speed, repetitions, number series and breaks should correspond to the objective pursued and the means employed to produce the desired results. All the means used must fall into two fundamental requirements: on the one hand to respect the kinetics of motric rowing machines and exercise a greater requirement than was commonplace athlete body.

Training the ability of force in rowing — whether we speak of the means employed on land whether we refer to those water-must pursue the same principles, namely to address the main muscle groups that take part in the Act of rowing and motric the request must be sufficiently large to cause a new adaptation of the body to a higher level. The training principles of force propose methods of adaptation of the organism to various loads used in preparation and make recommendations concerning the individualisation programme according to the specific needs of the athlete and the sport. Here are a couple of ways: the progression of cargo; Overload; the stepwise approach; cargo reverse steps; constant tracking, etc. It can be said that constant load method fits best with the





needs of the development of the capacities of canoeing. This statement does not preclude the effectiveness of other methods.

The method is organized on four stages weekly cycles. The first three weeks are neuromuscular adaptation and biological organism in constant loads of requests. Following a week of rebalancing, which reduces the amount of permissible aid intensities increase thus eliminating residual fatigue. In the second half of the week is scheduled the measurement of training effects (the tests) the value of the level adjustment.

The next stage is scheduled with the new values of the training requests as a result of the test results of the preceding stage. The new phase will run with a higher level of applications, which will determine a new qualitative adaptation of the body and its functions.

Very important is a rule in the process of training namely training every lesson should include activities that require the same energy system.

Sports performance training is as we know an applicant activity, requiring many hours of training and even sacrifices on the part of the athlete. The volume and intensity of continuous increase, while athletes repeated the exercises several times.

The research that I have proposed an answer to part of the present needs of the rowing, the uncertainties in this direction and, in general, to novelty and progress.

At the same time, these results will be used to improve training programmes for athletes from the rowing clubs.

The relationship between water and the workouts on the Ergometer has complied with the optimal use of research in order to obtain the highest performance level.

Prediction results from Ergometer (Gagea, 2006) is dependent on the different levels of training and competition experience. Results from the rowing machine can be status indicators and the selection for proximele competitions only if training and experience that competition is high.

The correlation between the results of the exercise and competition performance is slightly analyzed internationally without necessarily saying that is neglected or uninteresting, but it can be said that it is still a non public information because it remains a trade secret for most countries with tradition and performance in rowing.

Rowers were using ergometer to teach and reinforce rowing technique, to train and become familiar with the specific effort to acquire the necessary qualities of a winner, and the coaches use them to diagnose and evaluate the athlete from the technically and physically, as well as to forecast the evolution in order to establish its action plan for attainment of the objectives proposed.

Prediction of the rate of progress and benefit from the proximele competitions may be based in modest terms, the correct interpretation of information derived from testing on ergometer. It goes without saying that this information, though, need to be corroborated with comments the coach, doctor's lot and interpreted in terms of major competitions

For further growth of the performance does not diminish any sides, research that could help coaches and Methodists in their work with athletes.

These factors are very many in number and virtually no one can make a complete list of them. At the same time, most are in close contact with each other, it influenced each other.

Of course, we can talk and can be investigated on a lot of factors that have a great importance in the success in rowing, but according to the technicians of the Romanian as "priority problems in obtaining some valuable World Cup performances are achieving at a high quality level of quantitative indicators of readiness and by a selection of human material, all of them confirming the requirements rowing performance".(Florescu, 1983).

At the same time we can say that everything that can influence a person's physical environment, such as air, water, Sun and other physical factors of the environment, with direct influence on which boat (wind, wave, etc.) – or social-opponents, teammates, the Gallery, the cantonment, the coaches and all other persons from the technicians, and even the feelings, attitudes, challenges and other psychic influences-can constitute a factor or restrictive for facilitativ of the sport.

So competition in rowing performance is given by the product of the effects caused by the action of concentric to a multitude of factors among which we remind: the amount of biological material, the exercise of sports training, physical investment to ensure sports training cantonamentelor in terms of using the latest scientific concepts of training and recovery, through a managed. Factors which may be considered important or relevant sports performance are in the hundreds. They can group the factors: physical, biological, metodologici, organizatorici, random and circumstantial.

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