

# Rehabilitation potential of inclusive sailing

Shumova Yulia Vladimirovna  
Associate Professor, Department of  
Modern Educational Technologies,  
Institute of Open and Distance  
Education  
South Ural State University,  
President of the  
Center for the implementation and  
development of inclusive technologies  
Chelyabinsk, Russia  
shumovayv@susu.ru  
0000-0002-2145-7099

Shumov Alexander Vladimirovich  
Institute of Open and Distance  
Education  
South Ural State University,  
Leading Specialist,  
Center for the implementation and  
development of inclusive technologies  
Chelyabinsk, Russia  
shumovav@susu.ru  
0000-0002-9020-7085

Barannikov Konstantin Vitalievich  
CEO  
Institute for Management Design and  
Competitive Strategies  
Yekaterinburg, Russia  
kb@integra-ural.com  
0000-0002-3458-2358

**Abstract.** *The purpose of the article is to reveal the rehabilitation potential of inclusive sailing and to justify the need to include this sport in the list of basic sports according to the Federal Law of the Russian Federation dated 04.12.2007 No 329-Φ3 “On Physical Culture and Sport in the Russian Federation” [1].*

*The article describes the current forms of inclusive sailing competitions. Criteria for the implementation of the rehabilitation potential of the sport are formulated. Based on the results of a study performed on the premises of the Inclusive Sailing Committee of the Sverdlovsk Region Sailing Federation, a conclusion is drawn about the rehabilitation potential of inclusive sailing in the context of observing the principle of inclusive interaction about delegating a key role to a person with disabilities and health limitations. Attention is paid to the physiological mechanisms of work in an inclusive team.*

**Keywords -** *rehabilitation, socialization, adaptive sports, inclusive sports, sailing.*

## I. INTRODUCTION

Physical education and sports are one of the most important areas of rehabilitation for persons with disabilities and health limitations. Article 31 of the Federal Law of the Russian Federation dated 04.12.2007 No 329-Φ3 “On Physical Culture and Sport in the Russian Federation” [1] classifies the development of sports for people with disabilities and persons with health limitations as one of the priority areas.

Physical rehabilitation and social adaptation by means of adaptive physical education and adaptive sports are managed by rehabilitation centers, sports clubs for disabled people, sports organizations. Thus, achieving high results is not a priority for inclusive sailing. Although the principle of competition is one of the most important principles of inclusive sailing, sports achievements are a by-product compared to social and physical adaptation.

The Inclusive Sailing Committee of the Sverdlovsk Region Sailing Federation has developed two standards for inclusive sailing competitions, taking into account the psycho-physical characteristics of persons with disabilities and health limitations. The first “Inclusion-8” format is a modified fleet race. The second “Inclusion-2” format

presumes modified match races. This format is of particular interest for research, mainly because the results of the competitions are more transparent for statistics, eliminating statistical observation errors and increasing the confidence interval. Since yacht competitions are held in pairs, many random factors are excluded that frequently arise as a result of a great number of competing yachts. Another important factor is the change of yachts by crews, the team competes half of the races on one yacht, the second half on another yacht, which eliminates the statistical error associated with the yacht itself.

The rehabilitation potential of inclusive sailing is mostly achieved by the long-term participation of a person with disabilities and health limitations in training and competitions in inclusive sailing. The second criterion for the implementation of the rehabilitation potential is networking between all participants, including professional athletes, organizers and sponsors. The third criterion is a positive change in the social role of all participants. This contributes to the formation of a tolerant attitude towards people with disabilities and health limitations in society. People with disabilities change the role of ordinary participants for the roles of “recruiter”, co-organizer and even organizer.

## II. LITERATURE REVIEW

The issues of medical and social rehabilitation were studied by R.M. Voitenko [4], Yu.V. Goldblat [5].

The works of O.N. Voskresensky, Yu.N. Klemesheva [3], V.P. Belova, V.A. Vechkanova, I.N. Efimova [6] are devoted to criteria for the implementation of rehabilitation potential. The history of sailing is revealed in the works of Yu.V. Kryuchenkova [7].

Eric Twiname studied the technique of “blind” control of a yacht and the relationship between the use of this technique and the results of sports competitions [2].

The theory of inclusive interaction is developing by Yu.V. Shumova [8-11], criteria for effective inclusive interaction were formulated by K.V. Barannikov.

## III. MATERIALS AND METHODS

The study was conducted on the premises of the Inclusive Sailing Committee of the Sverdlovsk Region Sailing

Federation, created in 2014 for providing regulatory support and conditions for the development of inclusive sailing. The study used a quality assessment methodology with biologically active communication developed by the Institute for Management Design and Competitive Strategies in 2017.

For analysis, we used the results of the “Inclusion -2” competitions in 2014-2019. A total of six competitions, eight races each (2000 m distance, Ricochet 747 yacht, 30 m<sup>2</sup> sail area, mainsail and staysail, additional sails are not used). The teams included sailors without a category (visually impaired group I), skipper - master of sports, and bowman - candidate for master of sports. The total weight of the athletes of each team is 350 kg ± 10 kg. The dependence of the competition results on sailing experience in an inclusive team was assessed. Experience was calculated as the total number of both match and fleet races conducted by the skipper in an inclusive team.

A direct observation method was also used. A series of tests were carried out with recording of accomplishing tasks and gybing a yacht.

#### IV. RESULTS AND DISCUSSION

The idea of blind sailing is not new. Eric Twiname explicitly points out the need for blindfolded skipper training [2]. The skills formed during such training can be useful not only in competitions, but also have practical value when sailing in the dark or in conditions of limited visibility. In our study, we confirm the conclusions of Eric Twiname regarding blind sailing. Direct observations indicate that even experienced helm persons lose advantage when they do not use blind control and spend an average of five seconds to look around.

Thus, “blind” control can be considered a special case of sailing in an inclusive team.

One of the most important principles of inclusive interaction that determines the social component of rehabilitation is the delegation of a key role in the team to a person with disabilities and health limitations. In inclusive sailing, this principle is respected at two levels. When sailing, the person with the disability is assigned the role of a sailor, and other team members are not entitled to help this person. It should be noted that this is not prohibited by the rules of competitions, since sometimes such a work requires much more effort than one athlete may produce. In order to exclude such situations in inclusive sailing, a spinnaker is not used, both in match competitions and in fleet races, competitions are not held in a strong wind, so the efforts of one athlete are quite enough for sailing.

The second level of delegating a key role is connected with a delayed effect as gaining the skills of sailing in an inclusive team, professional athletes improve the results of regular competitions. This is due to the comprehensive effect of inclusion based on the establishment of non-verbal communication, mutual understanding, and the development of “autopilot” skills. Indeed, according to popular opinion, sailing is approximately 70% intellectual. Thus, performing some actions automatically, athletes have time to make a decision. The athlete does not need to look around, losing precious time and paying less attention to sailing the yacht. Conclusions about the situation are made with the help of other sensations, such as the sensation of the wind by tactile

and temperature receptors of the skin, the sound of a wave, low-frequency vibrations in the sails, etc. Training in an inclusive team becomes a good practice for any athlete.

For analysis, we used the results of the “Inclusion -2” competitions in 2014-2019. A total of six competitions, eight races each (2000 m distance, Ricochet 747 yacht, 30 m<sup>2</sup> sail area, mainsail and staysail, additional sails are not used). The teams included sailors without a category (visually impaired group I), skipper - master of sports, and bowman - candidate for master of sports. The total weight of the athletes of each team is 350 kg ± 10 kg. The dependence of the competition results on sailing experience in an inclusive team was assessed. Experience was calculated as the total number of both match and fleet races conducted by the skipper in an inclusive team.

Data that does not meet this criterion was removed from the sample. Of the 48 races, 43 fit this criterion; we can talk about a 90% confidence interval. Figure 1 shows the dependence of the competition results on the sailing experience in an inclusive team.

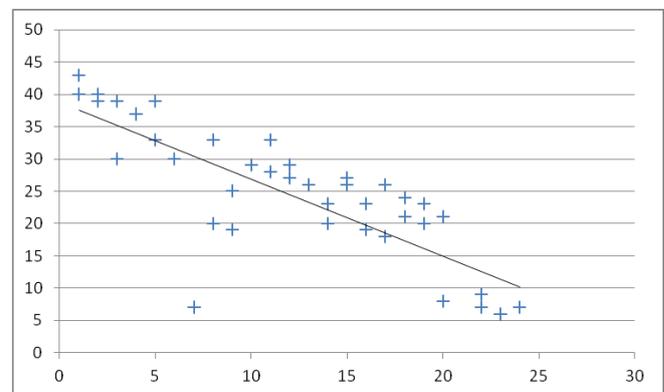


Fig. 1. Observation results (confidence interval 90%, correlation coefficient -0.77)

In the context of the foregoing, it can be said that the social component of inclusive sailing is fully disclosed through the principle of delegating a key role to a person with disabilities and health limitations.

Let us evaluate the rehabilitation potential of inclusive sailing. Practice has shown that 86% of participants in inclusive sailing competitions participate in them repeatedly, 74% of participants stay in inclusive sailing for more than a year. Since 2014, inclusive sailing competitions have gained popularity and entered the international level due to networking. Since this sport is not included in the list of basic sports in accordance with the Federal Law of the Russian Federation dated 04.12.2007 No 329-Ф3 “On Physical Culture and Sport in the Russian Federation” [1], its development is a pure initiative of civil society.

A positive change in the social role of all participants in training and competitions in inclusive sailing was established. This, in turn, contributes to the tolerant attitude towards people with disabilities and health limitations in society as they change the role of ordinary participants for the roles of “recruiter”, co-organizer and even organizer. The survey showed that people with disabilities and health limitations not only return to sailing and stay there for a long time, but also gradually change their social role, begin to

develop inclusive sailing, and become organizers of inclusive sailing events. A positive change in the social role, in fact, affects all spheres of life of people with disabilities and health limitations. There is a gradual rejection of a socially-dependent position resulting in active participation in public life.

According to all three criteria, the rehabilitation potential of inclusive sailing is realized.

Next, the attention is to be paid to the physiological mechanisms that allow implementing this potential. In 2017, the Institute for Management Design and Competitive Strategies developed a methodology for assessing the quality of various inclusive activities with biologically active communication. This technique consists in measuring the activity of the alpha and theta rhythms of the brain by a modern electroencephalograph. Measurements took place one day before (Fig. 2) and after (Fig. 3) inclusive interaction.



Figure 2. Activity of alpha and theta rhythms of the subject's brain before inclusive interaction

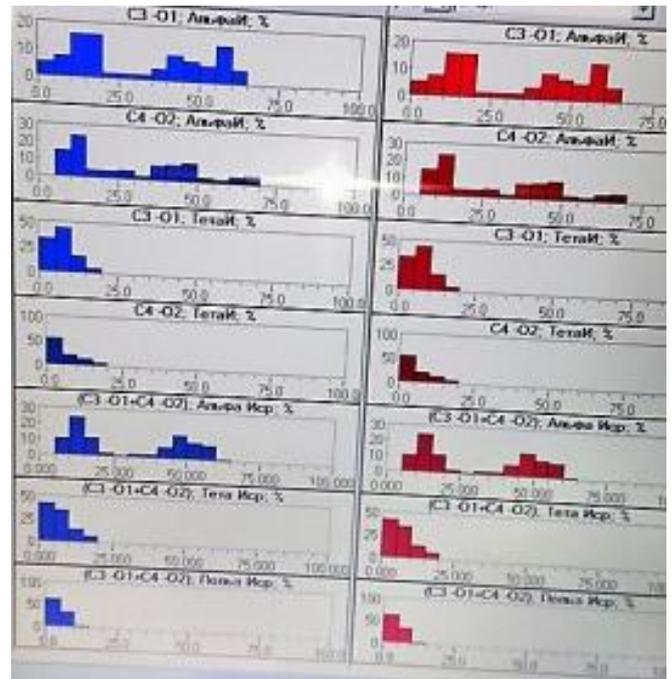


Figure 3. Activity of alpha and theta rhythms of the subject's brain after inclusive interaction

Researchers associate alpha and theta rhythms of the brain with creative search. With inclusive interaction, an increase in the activity of alpha and theta rhythms of the brain is observed in two or more times in comparison with the same actions without inclusive interaction. We can assume that the rehabilitation potential of inclusive sailing through the mechanism of creative search has been proved, but this aspect requires further study.

## V. CONCLUSION

“Blind” sailing can be considered a special case of sailing in an inclusive team.

The almost linear relationship between the sailing experience in an inclusive team and the results of competitions confirms the need for acquiring such experience. For people with disabilities and health limitations, these competitions reveal the social component of rehabilitation through one of the principles of inclusive interaction - delegating a key role. The rehabilitation potential is revealed at two levels, directly during the competition and at the level of the delayed effect expressed in the training of professional athletes. Although inclusive sailing does not make it a priority to achieve results, it affects the performance of professional athletes outside inclusive sailing competitions.

The comprehensive effect of inclusive events is associated with activation of the alpha and theta rhythms of the brain, however, this aspect of the problem requires further study.

In addition to the actual rehabilitation potential, engaging in inclusive sailing has a number of other positive features, such as the formation of a tolerant attitude towards a person with disabilities and health limitations in society.

At present, the development of inclusive sailing is an initiative of civil society only. Based on the foregoing, we consider it expedient to develop inclusive sailing within the framework of the state policy and introduce this discipline

into the list of basic sports in accordance with the Federal Law of the Russian Federation dated 04.12.2007 No. 329-ФЗ "On Physical Culture and Sport in the Russian Federation".

#### REFERENCES

- [1] Federal law of the Russian Federation of 04.12.2007 No. 329-FZ "on physical culture and sport in the Russian Federation»
- [2] Twina E. *Start to Win: The Classic Text*. Bloomsbury Publishing, 2013. 240 p.
- [3] J.N. Klemesheva, O.N. Voskresenskaya, "Rehabilitation potential and evaluation at nervous system diseases", *Saratov Journal of Medical Scientific Research*, 2009, vol. 5, № 1, p. 120-123.
- [4] Voitenko R. M. *Fundamentals of rehabilitation and social medicine: concept and methodology* St. Petersburg.: "MEDIA", 2007. Pp. 21-28.
- [5] Goldblat Yu. V. *Medico-social rehabilitation in neurology*. SPb.: Polytechnic, 2006. Pp. 65-67.
- [6] V. P. Belov, V. A. Vechkanov, I. N. Efimov *Rehabilitation potential of chronically ill: analysis, content, evaluation. Medical and labor expertise. Social and labor rehabilitation of disabled people*. M., 1975. Vol. 2. Pp. 26-31.
- [7] Kryuchenkov Yu. V., *Conquerors of the two elements : sailing in the Middle Urals*. Yekaterinburg : PAKRUS, 2014. 172 p.
- [8] Shumova Yu. V. *Organizational and legal bases of inclusive interaction between all participants of the educational process in higher education: textbook*. Chelyabinsk: SUSU Publishing center, 2018. - 63 p.
- [9] Shumova Yu. V. *General Cultural competence of inclusive interaction between all participants of educational process (OK-100). Continuous inclusive professional education: materials of Interregional scientific and practical conference*. Chelyabinsk: Chelyabinsk publishing House. state University, 2019. Pp. 130-136.
- [10] Shumova Yu. V. *Interaction in the sphere of inclusive education: communicative and legal aspect. Science of SUSU: Materials of the 70th scientific conference. Section of social Sciences and Humanities*. - Chelyabinsk: SUSU Publishing center, 2018. 699 c., Pp. 727-732.
- [11] Shumova Yu. V. *The problem of inclusive interaction between all participants of the educational process: communicative and legal aspects. Scientific spring Ispip-2018: collection of materials of the scientific and practical conference "Modern educational space-experience and prospects of inclusion" and IX City speech therapy seminar "habilitation and rehabilitation of persons with speech disorders"*. SPb.: CHOU VPO "Institute of special pedagogy and psychology", 2018. Pp 235-238.