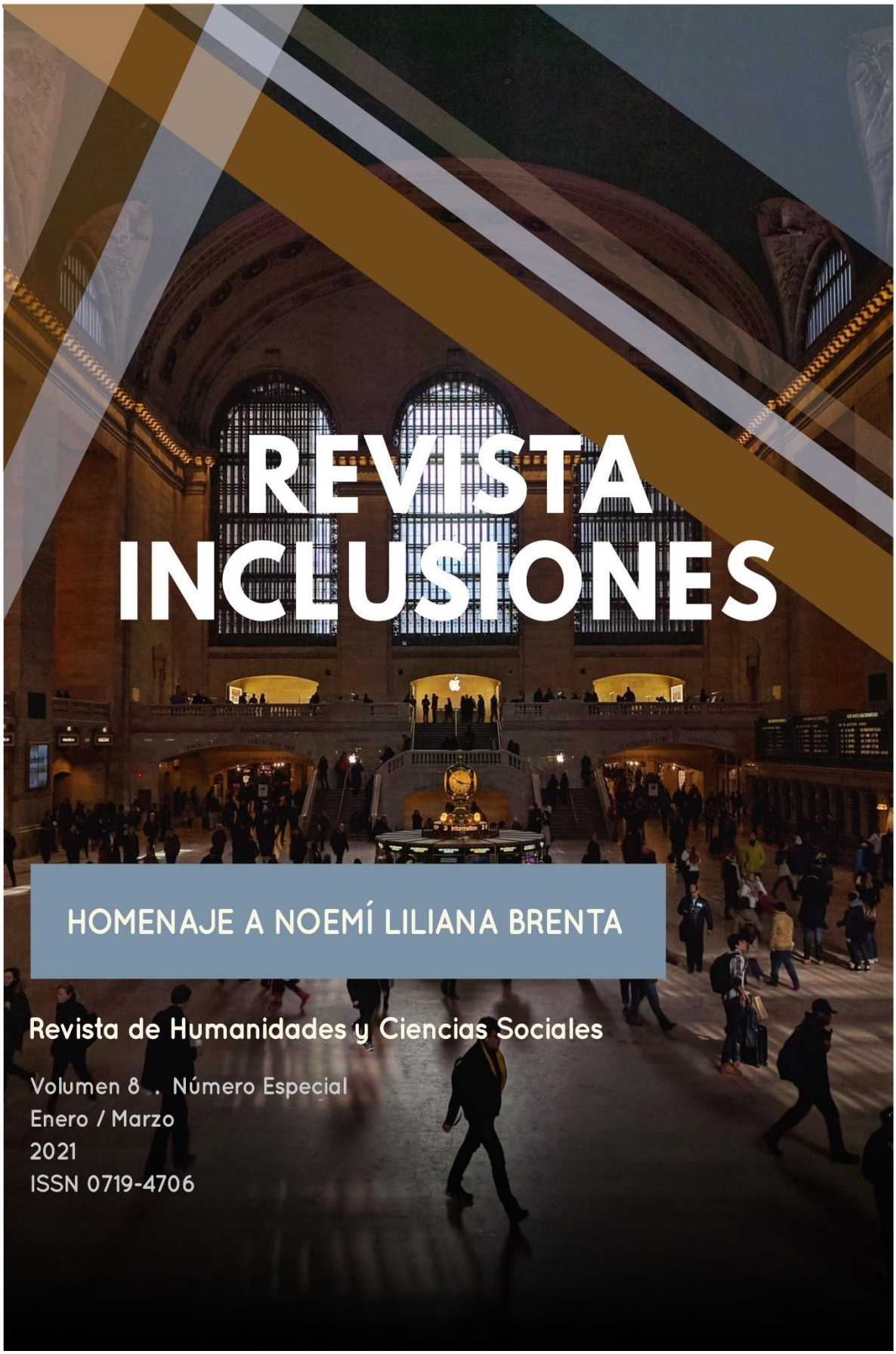

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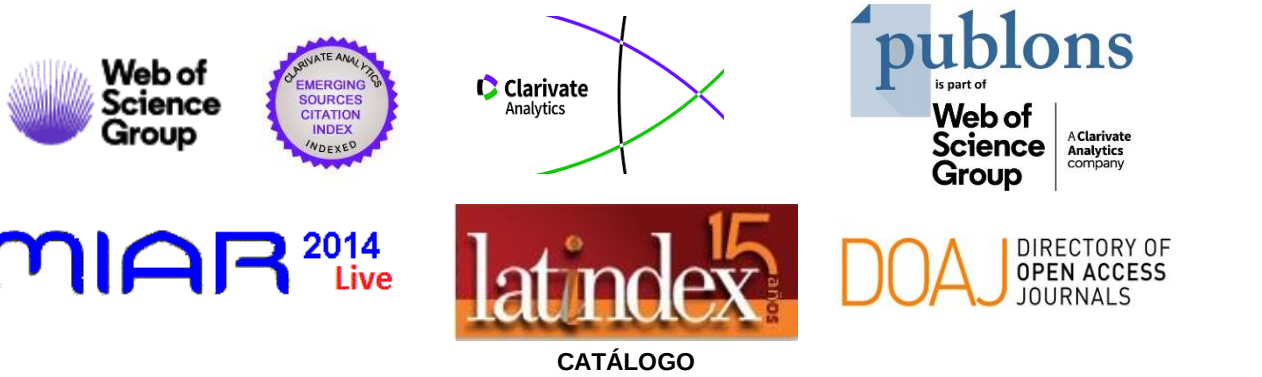

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IMPLEMENTATION OF NEW DIGITAL TECHNOLOGIES IN SPORTS EDUCATIONAL PROCESS

Petr Ryskin
Ural State University of Economics, Russian Federation
ORCID: http://orcid.org/ 0000-0002-7081-1613
post-1816@yandex.ru
Ph. D. Elena V. Davydova
Ural State University of Economics, Russian Federation
ORCID: 0000-0001-9522-8232
davydova_7676@list.ru
Ph. D. Stanislava S. Fagina
Ural State University of Economics, Russian Federation
ORCID: 0000-0002-7901-1655
faginastasya@mail.ru
Ph. D. Natalia N. Shuraleva
Ural State University of Economics, Russian Federation
ORCID: 0000-0002-8037-0321
shuraleva74@bk.ru

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Abstract

The relevance of the study is due to the need to determine ways to adapt digital technologies to the specifics of training in the field of physical culture and sports. The aim of the study is to determine the features of the use of digital technologies in sports events. The study was conducted at the Department of Physical Education and Sports of the Ural State University of Economic in the period 2017-2019, during mass sporting events. The information base of the study consists of observation materials for 149 participants of the “Nations Cross». The research methodology is based on the use of geo-information systems to track the route of the race participants. The data obtained show that when adjusting the results of the race according to the parameters of the geolocation, some of the participants shortened the route because of which they received overrated indicators.

Keywords

Digital technologies – Geographic information systems – Route – Reliability of results

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Introducción

Digital technologies are a new direction in improving human life in various fields. Their use in the processes of training allows to make an objective parameter in the assessment and self-assessment of students. In an article by Ardolino et al.[1], the list of digitalization factors includes the level of admission to higher education. This factor demonstrates a direct impact on the level of digitalization of society and increases the likelihood that a country will belong to the group with a higher level of digital technologies applying. Among the most famous areas of digitalization in education, researchers distinguish:

- the use of online resources, noted in the work of Ivanov, Kaybiaynen, Miftakhutdinova[2].
- the use of cloud technologies noted in the work of Vaganova et al.[3]
- the use of distance learning technologies noted in the works of Stetsenko & Shirobakina [4].
- the use of geolocation systems, noted by Kureichik, Bova, Nuzhnov,[5].

Considered in this article geolocation technology involves the use of satellite navigation systems to determine the actual location of the object, according to Saprykin[6] this technology is widely used in economics, education, government, and other areas of human activity.

The introduction of these technologies allows not only expanding the information base in training specialists in physical education and sports, but also allows the leading athletes to carry out training activities systematically and continuously without interruption from training camps and competitive activities.

Research background

In the works of Vashliaeva et al.[7], it was noted that the training of specialists in the field of physical education and sports requires a comprehensive education for generating the necessary psychological attitudes, including the motivation for achieving success. This process largely depends on the value level of students, the change of which is quite difficult to implement.

[1] M. Ardolino; M. Rapaccini; N. Saccani; P. Gaiardelli; G. Crespi y C. Ruggeri, “The role of digital technologies for the service transformation of industrial companies”, International Journal of Production Research, Vol: 56 num 6 (2018): 2116-2132.
[2] V. G. Ivanov; A. A. Kaybiyinen y L. T. Miftakhutdinova, “Engineering education in the digital world”, Higher education in Russia, num 12 (2017):136-143.
[3] O. I. Vaganova; E. I. Dvornikova; M. M. Kutepov; Yu. B. Luneva y A. V. Trutanova, “Opportunities of cloud technologies in e-learning”, International Journal of Applied and Basic Research, num 6-2 (2017): 183-187.
[4] E. A Shirobakina; N. V. Stetsenko; A. Yu. Ilyasova; T. V. Khovanskaya; V. V. Koreneva y M. N. Sandirova, “Experience in the use of distance learning in the educational process of sports universities”, Distance and virtual learning, num 6 (2017):17-26.
[5] V. V. Kureichik; V. V. Bova y E. V. Nuzhnov, “An integrated instrumental environment to support innovative educational processes”, Open education num 4 (2010):101-110.
[6] M. Yu. Saprykin, Geographic systems as an effective tool for the functioning of a modern state”, State and municipal government, num 1 (2016):12-18.
[7] I. Vashliaeva; T. Volovik y N. Shuraleva, “Psychological attitudes during the training of specialists in physical culture and sports”, Journal of Physical Education and Sport, Vol: 19 num 2 (2019): 1247-1253 y E. V. Davydova; S. S. Fagina; I. V. Vashlyaeva y T. V. Volovik, “Research on the development of sports infrastructure in Russia”, Revista Espacios Vol: 40 num 30 (2019).

The formation of readiness for self-development in sports is considered in the works of Frey[8], Anderson[9], includes the impact on personal motives: goal setting, self-awareness, self-discipline of the student. During the training, students should be able to identify, formulate and plan the achievement of goals, develop common methods of action, adequately evaluate the results.

It is these processes that are affected by the technology of geo-informational assessment of the athlete's movement during sports or mass races. Geo-information technologies allow the student to independently evaluate the results, which forms an additional pedagogical effect.

The research method consists in the use by students of software applications for data accounting that provide, with a periodicity of about 1 second, recording in a file the current coordinates received from the satellites of the global positioning system (GPS), the totality of which describes the route of the distance covered by the participants and characterizes their main parameters during the race:

- speed.
- correspondence of the movement to the race route.
- stops.
- etc.

Thus, using the technology of geolocation it is possible to obtain the pedagogical effect of self-esteem of students' behavior.

It is important to have a balanced diet, which is provided by an optimal qualitative and quantitative ratio of proteins, fats, carbohydrates, vitamins and mineral salts, as well as physiologically correct proportions of the main parts of nutrients - amino acids, proteins, fatty acids, starch and sugar carbohydrates, the interaction of individual vitamins with other components of the food. For the analysis of anthropometric indices, the main parameters of anthropometry were determined: standing height, which was measured on a wooden stadiometer; weight, percentage of water and body fat, lean body mass, as well as the body build of the subject; biological age and visceral fat levels were determined using a Tanita BC-543 fat mass analyzer. At the time of the determination of anthropometric indices on the fat mass analyzer and height meter, the subjects got up barefoot with a minimum amount of clothing. The statistical significance of differences in sample values was determined using Student's t-test. The data in the text and in the tables are presented as the arithmetic mean and the standard deviation ($M \pm s$). Differences were considered statistically significant at $p < 0.05$.

Results

Based on the data obtained, diagrams illustrating the behavior of students during the mass race were constructed.

[8] J. H. Frey y D. S. Eitzen, "Sport and society", Annual review of sociology, Vol: 17 num 1 (1991): 503-522.

[9] A. G. Anderson; Z. Knowles y D. Gilbourne, "Reflective practice for sport psychologists: Concepts, models, practical implications, and thoughts on dissemination", The Sport Psychologist, Vol: 18 num 2 (2004): 188-203.

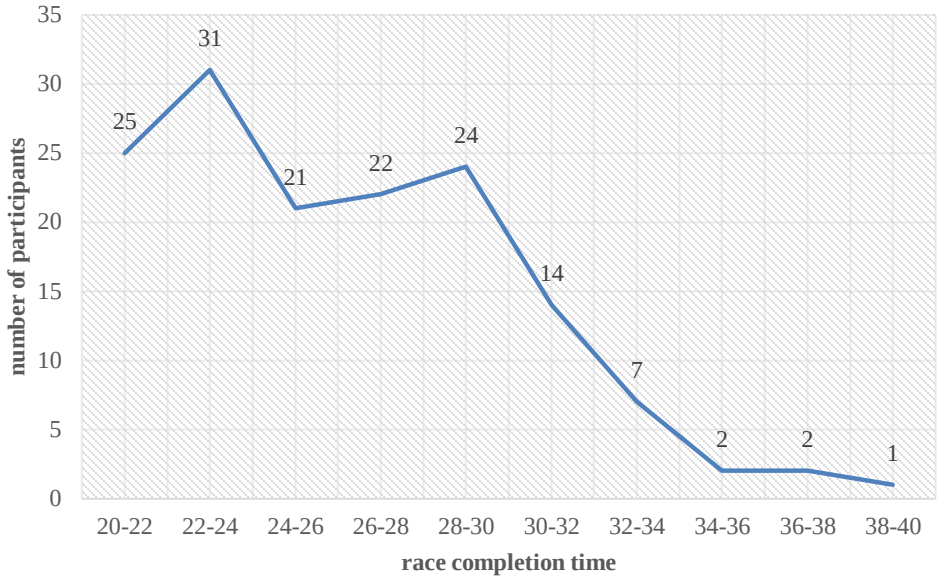

Figure 1
Assignment of race participants by time intervals reflecting the result
Source: Compiled by the authors

As can be seen in the figure 1, the largest group of participants finished the race in the interval from 22 to 24 minutes, the best result corresponds to the value of 20 minutes. Results in the range of more than 30 minutes were demonstrated by 26 students or 17.4%. Next, we consider the performance indicators of the participants (Fig. 2).

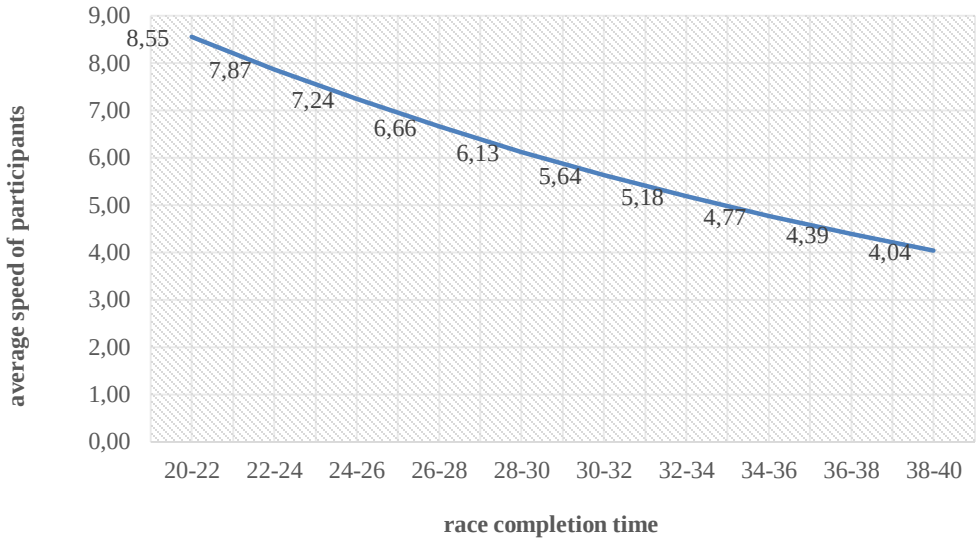

Figure 2
Speed indicators of the race participants in the context of time intervals, reflecting the result
Source: Compiled by the authors

Speed indicators reflect the average values of the movement of the participants in the race and decrease in proportion to the time result of the participants (Fig. 2). Next, consider the number of stops of the participants (Fig. 3).

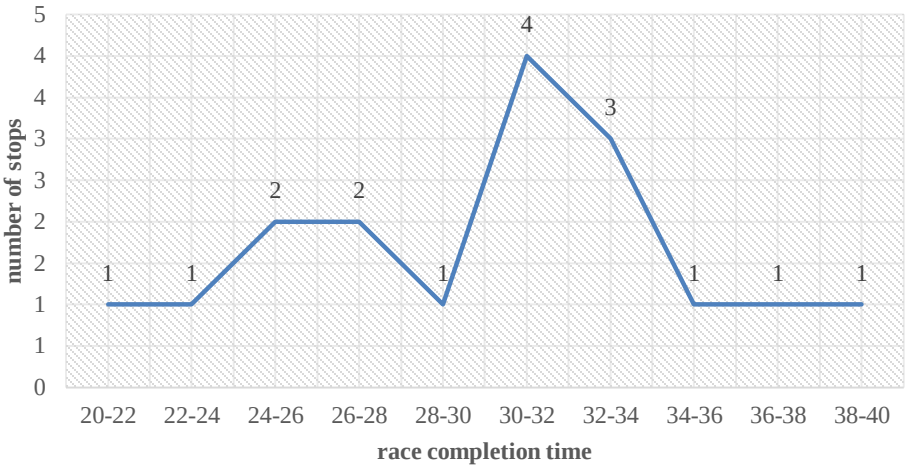

Figure 3
The number of stops of the race participants in the context of time intervals, reflecting the result
Source: Compiled by the authors

As can be seen in the figure 3, the number of stops of the race participants correlates with the results of the participants, the more times the participant interrupted the run, the worse result was demonstrated. Next, we consider the figure that reflects the correspondence of the movement of participants to the race route (Fig. 4).

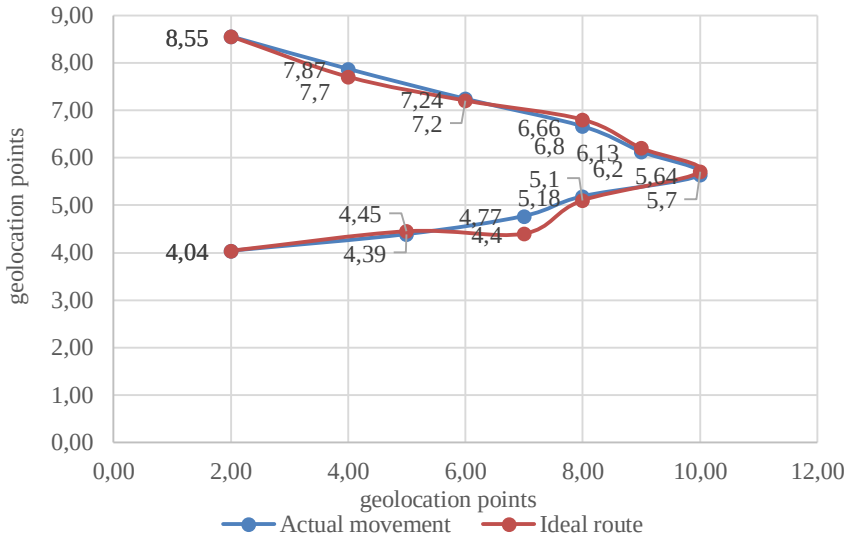

Figure 4
The results of checking the correspondence of the movement of the race participants and the ideal route
Source: Compiled by the authors

As can be seen from Figure 4, there are deviations detected by the race participants' geolocation tools. These deviations indicate a tendency to reduce the distance and the need to adjust the results of the race. Consider the data shown in Figure 1 with the adjustment of the participants' results assuming that the movement of the race participants and the ideal route are considered.

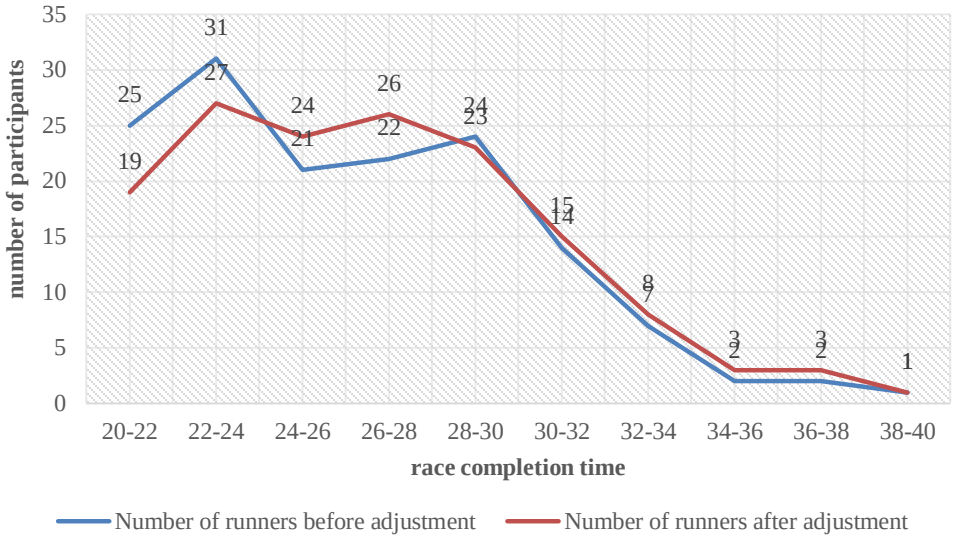

Figure 5
Assignment of race participants on time intervals that reflect the result before and after adjusting the parameters of geolocation.
Source: Compiled by the authors

As a result of adjusting the race indicators according to the parameters of geolocation, it can be concluded that some of the participants slightly shortened the route because of which they received overrated marks. These parameters are important for the formation of future specialists in the field of physical education and sports since they allow to objectively evaluate your own results and be responsible for your own decisions. In addition to the pedagogical effect for students, the use of digital technologies will improve the evaluation parameters of competitions.

Conclusion

The study demonstrates the need to use digital technology of geolocation in the training of specialists in the field of physical education and sports, as its use significantly increases the objectivity of assessing students. This technology feature allows to obtain a pedagogical effect, based on the motivation of students to improve their behavior, reduces the destructiveness of the competitive process, the possible manifestations of which are determined by the subjectivity of the assessments of teachers and coaches. Evaluation of the effectiveness of sports and recreational work in the educational organization on the basis of the models discussed above confirms the positive impact of the use of geoinformation technologies in the processes of educational activity management on the example of the Ural State University of Economics. The implementation of an initiative, creative approach to managing sports and recreation in an educational organization, ensuring the innovativeness of sports events also provide a positive effect in the interests of sports marketing and a healthy lifestyle, as well as improving adaptation skills and moral-volitional qualities of students.

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