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**ORGANIZATION OF PHYSICAL TRAINING AT PLANTS  
(ORIGINS, MODERNITY, PROSPECTS)**

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**Abstract**

The article researches physical training organization Soviet plants and at those of the present time. Organization of physical activity at Russian plants first appeared in the Soviet period. Also economic efficiency and social significance of sport activities in the Soviet period and nowadays are presented. The article also characterizes the process of formation and implementation of industrial gymnastics and other forms of physical culture at Siberian plants. The data about the most popular sports events and the organization of the working process together with industrial gymnastics at the place of residence are given. The article contains examples of organization of physical activities and sports events in the country nowadays. From this point of view of the experience, all-round implementation of physical-cultural activity is of intense interest. Some international corporations apply physical culture and sports activities as factors improving labour productivity of the staff. In that context, all-round revival of traditions of the bygone epoch is of a great significance for our country.

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**Keywords:** Physical culture, health preservation, industrial gymnastics

## 1. Introduction

The article studies the influence of physical culture and sport on the labour efficiency, describes the use of innovations in industrial development. The article analyses the information from Russian and foreign sources and presents the experiences of implementing physical culture in factories.

The importance of physical culture and sport for the government and our society on the whole is recognized in the modern world. Big enterprises pay special attention to the productivity of workers nowadays. It is acknowledged that the labour productivity, material well-being, and the social status of



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people directly depend on the state of their health. That is why, efficient population reasonably needs a healthy life-style and improvement of its health. So, health is appreciated, and physical culture and sport are the way of preserving it.

## 2. Methods

Organization of physical activity at Russian plants first appeared in the Soviet period. Physical culture firstly was introduced at plants in the 1920s to eliminate so called “occupational hazards”.

For example, at some plants in Siberia (e.g. Zinoviev’s plant in Omsk) corrective exercises for the youth were introduced during the breaks under the supervision of instructors and doctors. These exercises were divided into several groups according to the production peculiarities (State Archive of Novosibirsk Region).

The Science-Research office of Physical Culture in Siberian Council of Physical Culture was opened in Novosibirsk in 1929. Its activity resulted in the establishment of production gymnastics in Siberian regions (Starichenko, 1969).

The clothing factory named after Central Committee of tailor’s trade union and Kuzbassugol Directorate were the first enterprises where the production gymnastics was introduced. The methodologists of the Science-Research office created the sets of physical exercises for the staff of these enterprises which corresponded to their professional activity. These exercises were created with the concern of their influence on the organism during different labour loads, and the complexes of exercises were elaborated taking into account workers’ movements, workers’ posture, and the amount of physical load during the production process, the rate of work, attention strain in mind (Archive, 1960).

In the 1930s, standards of gymnastics and physical activity organization appeared at the enterprises. In March, 1933, the National Commissariat of Labour allowed using the labour safety funds of enterprises for organization and implementation of production gymnastics (Starichenko, 1969). The years of the Great Patriotic War and postwar period were a hard trial for psychological and physical abilities of the citizens of the USSR. In spite of the titanic labour, physical exercises though reduced existed at many enterprises during those years (Makartsev, 1974).

At the end of the 1950s, the Communist Party set a goal for the citizens of our country that by the end of the seven-year period, every fourth of the workers at the enterprise and the maximum amount of the schoolchildren and students engaged physical culture and sports (1959-65) (Hotyanova, 1967).

Great hopes for organization of physical culture movement at the plants were set on the Physical education departments’ graduates. There was even the aim in some Siberian cities to train social sport instructors and coaches from universities’ graduates. From the very beginning of their working experience, they became administrators and organized physical culture at enterprises. This experience became widespread in the region (Archive).

Large enterprises had better conditions for organization of physical activities, because they had better material and technical facilities or funds for its creation. Social instructors conducted these sports events. Physical groups of the enterprises which did not have such opportunity united into one collective (Archive).

At the beginning of 1960, the best physical culture groups received the title ‘Sports club’. The first sports clubs appeared in the 1960s at such enterprises as “Uralmash” (RSFSR), “Dnepr” (Ukraine),

“Selmashvets” (Kirgizia), “VEF” (Latvia), “Vostok” (Kazakhstan) (Documentation Centre of the Newest History of Tomsk Region). In 1962, a sports club became the highest form of the first organization of the amateur sport movement. To transform a physical culture collective into a sports club, it was necessary to do huge organizational work: to involve actively not less than 40% of workers of an enterprise in mass kinds of sports and physical culture, to develop not less than 15-20 kinds of sport, to train qualified sportsmen (to prepare annually sportsmen of the first level – Candidates and Masters of Sports). Besides, a sports club had to prepare the most active social members, to have good sport facilities, to conduct social work with children.

### 3. Results

Amateur sport contests of sports groups, divisions and work-shops were held. The criteria in these contests were not only sports achievements but also production performance. For example, the sports club of the State Optical-Mechanical plant (Leningrad) had the following motto: “Every athlete and sportsman must fulfill the shift’s amount of work”. By the beginning of 1966, this club had had more than 9 thousand of competitive sportsmen, 86 Masters of Sports, about 6 thousand of tourists (CDNI TO. F. 1124). In June, 1963, the director of Omsk oil-processing plant, Ryabov, organized “A Health Work-Shop”. It was a complex of sport facilities with a health and recreation sanatorium, health groups, and various sport sections and so on. The successes of this Work-Shop were demonstrated at the Exhibition of National Economy Achievements in Moscow. By the end of 1965, 450 of physical culture collectives in Russia had been renamed into sports clubs. Those enterprises which created conditions for the physical-cultural activities of their workers solved several strategically important issues: health and productivity improvement of the staff; organization of sensible and socially adequate leisure activities; family relations improvement; realization of ideological upbringing and so on. For example, owing to active health promotion in 1964-1965, the number of sick-leaves decreased by 20-30% at a number of plants in Altayskiy Kray (Transport Machine-Building Plants, Machine-tool Building Plants, Biysk Chemical Plant, “Zarya” collective, Barnaul furnace plant), which resulted in considerable fund savings. Physical culture took the first place in leisure activities at many plants, there appeared some sport traditions (CDNI TO. F. 1124).

Ways of involvement of workers into sports activities constantly improved and diversified. For example, the Sport Center “Trud” gave a start to “competitions” where mostly the members of health groups took part; they were people in their thirties and older. Marathons were annually conducted (CDNI TO. F. 1124).

Mass winter competitions, such as competitions “The best ski work-shop”, ski competitions and sports festivals are among workshops, winter multisport competitions, hockey competitions, skating competitions, and other mass sports competitions became traditional. Summer sports programmes were also various: Summer Youth Festivals, cross-country races among plants, taking sport tests (Ready for the Labour and Defense) became compulsory (CDNI TO. F. 80).

Siberian manufacturers of the 1970-ies conducted profound enlightenment work. So, the physical-culture collective of State Bearing Plant (SBP 5) in Komsomol trade-union ski race in winter, 1979-1980, took the third place among the manufacturing collectives of our country. At the beginning of 1980,

Physical Culture Boards, Committees on Sport competition “Ready for the Labour and Defense” were created and functioned at this plant (Doholyan, 2014).

Many plants improved the territories of the neighboring districts, organized different leisure activities. So, in 1978, Tomsk plant “Sibelectromotor” actively conducted the recreation work in the district. As a result, there was a 30% reduction of crime in comparison with the year of 1977, the number of vulnerable families and deviant teen-agers decreased. The social work in the community resulted in the reduction of administrative offences, labour offences at the plant in general. The number of people in the collective who committed crimes, conducted themselves disorderly, were taken to the sobering-up centers reduced more than two times (Strategy of physical culture and sport development in the Russian Federation till the year of 2020).

Not only “Sibelectromotor” had big experience of social work in the community; the leading positions also belonged to the Radiotechnical plant and to the State Bearing plant. In 1983, Voluntary Sport Organization (VSO) “Trud” in Tomsk had 14 physical-cultural recreational clubs in districts, where up to 100 races, ski races and different competitions were held involving more than 9000 people. (Federal special purpose program “Development of Physical Culture and Sport in the Russian Federation in 2006-2015).

#### **4. Discussion**

In the 1990-ies, a sudden reduction of industrial production and impoverishment of the working force took place. This period is characterized by the acute reduction of physical activity at the plants as well. Under these conditions, the Government of the Russian Federation sanctioned the Development Strategy of Physical Culture and Sport in the Russian Federation up to 2020, according to which after taking some measures there appeared improvement in the development of physical culture and sport among the working population (Vinogradov, & Okunkov, 2012). One of these measures was allocating money for the organization of physical activities and sport among its employees. But, not all the enterprises applied this influential factor which improves the economy not only of a single enterprise, but of the whole country. According to the documents (Vinogradov, & Okunkov, 2012), the system of physical culture and sport is aimed at the formation of the healthy and active nation. This issue concerns every region of our country and Tomsk region as well. But, as Vinogradov points out (LaVoy et al., 2015): “... the current data are not enough to decide what the existing system of physical education does for the population of our country...” Also, it is necessary to estimate the influence of the system of physical culture and sport on the population of separate regions and cities. If in the sport of high achievements, we can make estimation on the basis of the results in competitions, in mass sport we can only rely on the numbers of people going in for sport. To estimate the conditions and understand the prospects of the development of physical-cultural and sport activities, the sociological survey was conducted among the working population of Tomsk. Here, it is necessary to specify that during the Soviet epoch, Tomsk had rich traditions of organizing physical culture and sport activities among the population at the plants and in the community. And Tomsk polytechnic university during many years has been known as a “talent foundry” for the main industrial branch not only of Tomsk Region, our country, but also for foreign countries.

The extent to which socially-assigned and culturally mediated social identity affects health depends on contingencies of social identity that vary across and within populations in day-to-day life. These contingencies are structurally rooted and health damaging inasmuch as they activate physiological stress responses. It is known that physical activity contributes to immune activation; therefore, we can conclude that physical training has a favorable effect on the level of the efficient population health. In studies of E.C.P. LaVoy et al. (2015), the impact of physical activity on the immune system is shown in detail. It has been found that exercise mobilizes monocytes to the blood. It is known that dendritic cells are the main cells that initiate the immune response. LaVoy et al. (2015) tested if dynamic exercise would augment the generation of mo-DCs without compromising their differentiation or function. They concluded that physical activity enhances the amount of active mo-DCs without compromising their function, and thus may overcome some limitations associated with manufacturing these cells for immunotherapy (Urazova et al., 2013). Therefore, we can assume that a person engaged in physical culture is less prone to infections, and consequently is less likely to use sick leave.

The physical education is a diversified discipline including knowledge transfer, skills development and physical exercise (Mossa et al., 2016; Vinogradov, & Okunkov, 2012). Human labor plays a central role in modern manufacturing systems. Therefore, description of both hardware and human components is required for the redesign of such systems. One of the articles presents a methodology for job rotation in manufacturing systems that aims to ease employee's boredom and exploit the effect of rotation intervals on worker's skill learning and forgetting. To this end, a mathematical programming model for job rotation is proposed to measure employee's boredom and skill variations during a production horizon (Zhi, 2014). The paper of Kock Mummolo, Rooda (2009) shows that the dynamic worker behavior over time has a profound positive impact on the queuing behavior of flow lines. Simulation results show that the conclusion of these scientists hold both for short- and long-term simulation models. Traditionally, ergonomics and human performance issues have been investigated separately. In our days, production systems reached the high level of automation. It is known that workers, performing repetitive manual tasks, are exposed to the risk of musculoskeletal disorders (MSDs). Scientists from Italy, Mossa et al. (2016), revealed that the competitiveness of modern manufacturing systems is based on a high production rate and a high level of flexibility. They have revealed that the use of a high production rate causes high physical workload, and job rotation is adopted in order to reduce the ergonomic risk.

The survey was dot-addressed, which means it was conducted among the citizens in May, 2015, with the help of questioners. The questions were created so that the respondents' answers would show these issues: the attitude of the population to the physical activity and sport, involvement in sports activities (the level of activity at the given moment and needs); possibilities for doing sports, the state of organization of physical-cultural activity in the community; social features of respondents. The results of the survey showed that high percentage of Tomsk citizens regularly go in for sport. About half of the respondents (47, 5%) to the question "How often do you do sport or physical training?" chose the answer - 2- 3 times a week; 30% chose 'at the weekends'; 15% chose 'every day'; - 7,5% chose never. The analysis of the data received showed that, on the one hand, only half of the respondents devotes enough time to the physical cultural activities or, in other words, to their health. Though, it is necessary to take into account that many people do not go in for sport because of the lack of the affordable public sport facilities. This fact is supported by the answers to the following question of the questionnaire: "Do you want to devote more

time to the physical culture and sport?" 67,5% respondents answered YES; 7,5% - cannot say, 25% - NO. These answers make it evident that the population pays attention to the sport activities and wants to devote more time to it, but there is not enough possibility for this in the Russian Federation. The answers to the question «How often do you go in for winter sports? (skating, skiing, and others) showed that 32,5% of respondents take an active part in winter sports and take advantage of the peculiarities of the Siberian climate, understanding the economical profit and therapeutic effect of it. The question "What is your attitude to the mass sport activities annually held in the town? (e.g. football matches, "Nation's Race", "Ski-Track of Russia" and others) was answered in the following ways: the most of the respondents (35%) answered – "heard/saw/read of it from mass media", "take an active part in it" – 30%; have never heard/ known of it – 20%; took a part in it once – 15%. These results show that the working population is not motivated to take part in mass sport competitions. So, to popularize physical-cultural and sport activities in Tomsk and in the country, it is necessary to engage mass media, to stimulate attendance of sports competitions, to develop the projects of own programmes, to attract investments of commercial organizations and of sport elite, paying attention to the needs of the working population.

From this point of view of the experience, all-round implementation of physical-cultural activity is of intense interest. Some international corporations apply physical culture and sports activities as factors improving labour productivity of the staff. The "Rosneft" company actively supports both professional and amateur sports, considering that such elements of sport culture as constant striving for new achievements, determination, the will to win are the basic components of business philosophy of the company (the Federal special purpose program "Development of Physical Culture and Sport in the Russian Federation in 2006-2015"). As the implementation of the company strategy, "Rosneft" annually conducts programmes aimed at the development of the sport infrastructure: rents well-equipped sport gyms and swimming-pools for its workers. Besides, the company supports the building of new sport complexes in the Far East, in Siberia, and in the South of Russia. Only in 2012, the company donated money for the equipping of 82 sport complexes. In addition, sports competitions were organized, where about 5 thousand people took part in a race and 4 thousand people took part in track-and-field events, power-lifting, darts, and tug-of-war. The positive aspect in the company is cultivating different kinds of sport and engaging both the employees of the company and members of their families in the mass sports activities. The "Rosneft" company organized its own championship "Big Game" among the amateur hockey teams, which allows one to keep the best traditions of "people's game" and to keep-up the interest in one of the most popular kind of sports in Russia. In addition, the prize for the winning team was reequipping of yard skating rinks in different Russian towns. The project "Big Game" of the company made a significant contribution not only into the development of the children's sport, but also into keeping of legendary hockey traditions. One of the most important sport traditions of the oil-processing company "Rosneft" is Company Sports Festivals. 17 teams – 630 oil workers took part in this Spartakiad. All of them are the workers of the subsidiaries of the company. The sportsmen competed in four kinds of sport: hockey, skating race, ski race and tobogganing. New sportsmen and fans annually join the sport movement of the "Rosneft" company.

The other Russian company which actively supports sport movement in Russia is "Gaspromtransgas". It aims its sports and physical cultural activity, first of all, at the strengthening of corporate and Russian "sport spirit". Sports festivals, which are annually conducted by one of the biggest Russian companies,

aim at the propaganda of physical culture as a means of health enhancement and physical development of its workers. According to the mission of the company, its sports festivals are aimed at fulfilling of the following goals:

- formation of healthy life style, physical and moral cultivation of workers in subsidiaries of the “Gasprom” company as well as their children, exchange of working experience in the sphere of physical culture and mass sport, preserving and developing of sport traditions and connections;
- determining the level of mass-sport and health-promoting activity among the workers and their children (“Gasprom” subsidiaries and organizations).
- propaganda of mass-sport and physical-cultural activity and its development;
- team-building;
- besides the professional competence, one of the criteria of choosing the applicants for the vacant positions is sports achievement and doing sports as a hobby.

Sports holidays and celebrations are one of the necessary parts of the policy in “Gazprom” supporting sport and physical culture in Russia. Today, the company gives a serious support both to the professional sport and to the sportsmen of different levels. The company aims to keep this acute attention to the development of the sports movement in the future.

Corporate sport events became popular not so long ago, but they have already received the highest estimation among the great number of people. Corporate sports festivals grant the feeling of being a part of the real team, help to develop new talents. Besides, corporate sport competitions are an excellent way of keeping oneself in a perfect physical condition. During the sport corporate events, several aims are fulfilled, they are team-building, creating the “leaders’ group”, development of the system of strategic communications inside the business, company’s image improvement, development of inner and outer corporate connections in the process of sport competition.

## 5. Conclusion

Hence, since the 20s of the XX century, the issue of organization of mass-physical and sports activity among employees received a strategic importance. Numerous scientific researches in this sphere proved the necessity of implementation of sport and physical-cultural events into the manufacturing process, their economical effectiveness and social importance. Lowering the sickness level, fatigue elimination, crime and law-breaking prevention and a production capacity rise of the population – these are the small part of problems which are solved by means of physical culture. It is evident, that the experience of the Soviet state is invaluable and is actively used nowadays at a number of Russian enterprises. In that context, all-round revival of traditions of the bygone epoch is of a great significance for our country.

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