

**UPDATING OF THE PROBLEM OF USE OF COLOURING IN DESIGN FOR PEOPLE WITH DISABILITIES AND THE MAIN ERGONOMIC PRINCIPLES IN DESIGN OF GYMS**

**Introduction.** Physical culture and sport in modern society is an important source of strengthening of health of the population of Ukraine. The healthy lifestyle is the defining factor providing duration of active life of the personality, defines social, biological and mental wellbeing of citizens. The problem of disability was considered long since.

Color and coloring are irreplaceable assistants in design of objects for disabled people. Interaction of coloring and design of sporting venues for disabled people will be presented in this article.

Coloring is the science studying the nature and the main characteristics of color, psycho-physiological and cultural features of his perception, and also color contrasts, preferences and color harmony. By scientists it is established that color is a property of a surface of a subject to sort the rays of light getting on it and to reflect minor radiation from the surface. Without color the visible world is inconceivable. The person is constantly influenced by the color environment in which he lives. He receives the most part of knowledge about the world around, perceiving color which at a dawn of a civilization served people as both media, and a symbol, and ornament. In it the social importance of color consists. Color is an integral part of the subject and spatial environment which surrounds each person and has the huge expressive potential promoting development of certain emotions and visual feelings that does it by the excellent tool in hands of professional designers, architects and artists. Color and various color combinations help designers to transfer a certain emotional and semantic implication, or to cause the necessary emotions in the person.

Data about constructive and technological, impressive properties and ways of operation of an object are transmitted through color. Functionally important elements and details

performing key function and guides to tactile contact highlight with color.

Now it is difficult to call area of human activity where color wouldn't be used in this or that form. Its purposeful application became a peculiar indicator of culture of society [1].

Use of color in architecture has long traditions. History knows a set of striking examples of direct and evident link of color with architectural concepts, deep understanding of his art role, surprising harmony of color combinations during creation of architectural images.

Colors scientists researched for many years. A story of development of science about color is closely connected with sociocultural changes in society. The ancient Asian people, Egyptians, Greeks, Romans, Arabs painted the buildings outside and inside. Even marble temples and statues undersigned for Ancient Greece paints. It demonstrates absolute rejection by ancient Greeks of a colourless architectural form.

The polychrome is also inherent in architecture of the Byzantine and Romance periods of the Middle Ages. Architects of antiquity and the early Middle Ages considered color an integral part of a form and one of the main nuances causing the impression made by the architectural work. The last circumstance needs to be considered also in modern architectural practice [2].

Flickering mosaics of Ravenna and Byzantium, stained glass color light of Gothic cathedrals, the exulting beauty of the Russian towers of the 15-17<sup>th</sup> centuries, color splendor of baroque and noble restraint of classicism, wall ornaments of the Central Asian monuments - only a small part of evidences of very wide use of color in architecture at all times.

Le Corbusier said that all progressive architectural currents actively use color, and academism – is colourless. Thus, since ancient

times people trusted in force of color, in its curative properties. Presently color becomes active means of improvement of the vital environment, the esthetic organization of external space, and, especially, an interior.

Researches of domestic and foreign scientists proved that character of a color environment variously influences functional processes of vital activity of the person. It is established that the interrelation of sense organs is carried out thanks to vegetative changes of a nervous system. So 80% of color and light are absorbed by a nervous system and only 20% vision. There are general patterns of impact of color on the person. Among them psychological reactions which are defined by the fact that the color medium can frame slight, high spirits are primary, or, on the contrary, suppress activity. Color is capable to cause feeling of cheerfulness and fatigue, ease and gravity.

The sex of the person exerts impact on color interpretations also. For example, Gilford and Smith consider that women prefer red color, and men – blue. Interesting conclusions are drawn also by Ayzenk.

By means of the factorial analysis (this type of the analysis has been for the first time entered into an experimental esthetics by him) he has reached a conclusion that the hierarchy of preferences of flowers decreases in such sequence:

Blue> red> green>violet>orange> yellow.

In his opinion, this order remains almost invariable both at men, and at women (only at women yellow advances orange).

Results of other research conducted in the sixties with participation about 100 thousand respondents substantially differ from Ayzenk's data. Order of reduction of preferences in this case following: red> blue> green> yellow> violet [3].

Questions of the coloristic organization of interiors have been considered in works of such scientists as S. Alekseev, K. Auer, N. Belyaeva, V. Blochin, P. Desombr, T. Dozortseva, K. Kostov, M. Krichevsky, S. Lemeshev, L. Mironova, V. Nefedov, I. Pronina, N. Stepanov, B. Teplov, A. Ustinov, P. Shevarev, L. Yudin, G. Friling, B. Hazin, D. Christoff.

Construction of sports constructions is a separate direction in work of construction companies to which the special attention is paid today. Each new construction is not just walls and platforms, it perfectly designed buildings equipped with all most modern appliances.

The full-fledged sports construction is more, than just the building or the platform. This meeting place of people – association of adherents, enthusiasm of communities of athletes and fans, creation of the atmosphere of communication. This combination of the thought-over concept, planning, technologies and design. The understanding of it is the key to creation of the successful project. The sports industry constantly develops, bringing a large amount of new materials, technology solutions into world.

It should be noted the increasing requirements not only to high functional and strength characteristics of constructions, but also to registration (design).

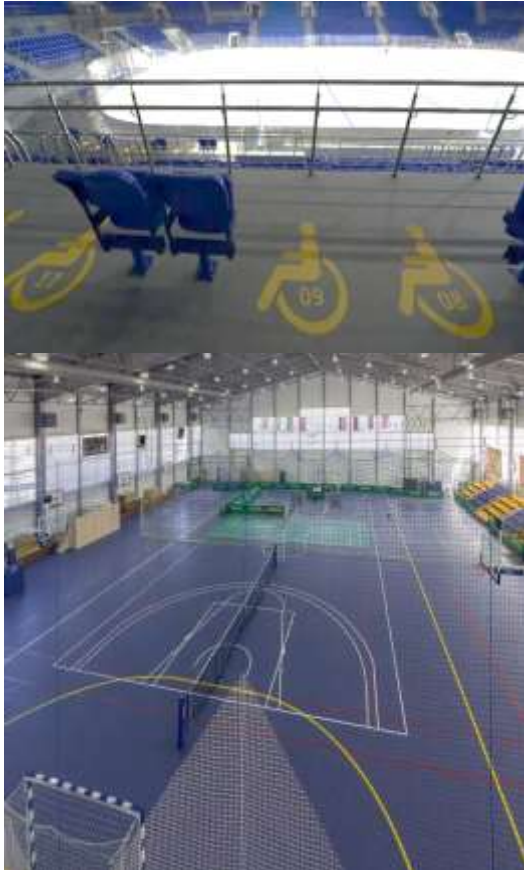
Design, construction and the equipment of sports buildings and constructions, in particular, of stadiums, gyms, swimming pools, playgrounds for the purpose of simplification of access for people to them with disabilities and, the main thing, implementation of sports and recreational and improving activity is one of components of the major problem of creation of the inhabited environment for disabled people, their complex rehabilitation and socialization.

Design activity assumes need of knowledge of the main properties of flowers. According to the theory of color perception, various colors differently influence a psychophysiological condition of the person. Influence of color can be direct and secondary.

Direct – defiant feeling of joy or grief, ease or weight, remoteness and nearness; secondary – causing associations. For example, red and orange colors are associated with fire or the sun, white – with the snow, blue – with the sky or water. In achromatic color gamut it is most easily perceived white and light gray colors, and oppressing are perceived heavy dark gray and black color. The thought-over color registration of gyms (and also the equip-

ment and stock) influences psychophysiological perception of space, promotes positive and creative trainings, spectacular performances, acquisition of skills of physical culture and sport. Competent color scale of the gym can prevent increased fatigue of athletes.

The quiet atmosphere promoting concentration of internal forces on process of a training and achievement of a certain result is necessary for the organization of sports trainings. Color scale of green, blue, white colors (Fig. 1) allows to organize necessary conditions.



*Fig. 1. Examples of color schemes of sports grounds. Center of sport «Evolution», Yevpatoria, 2016.*

Cold scale of shades is used more. For example, in halls of blue color it is easier for weight-lifters to train.

Also, by means of light it is possible to correct perception of heat and cold at the training person. Artificial publicizing of sports occupations and competitions has to promote good visibility, both athletes, and fans.

It is necessary to allocate with bright colors and contrast shades inspection zones and boundaries in the sports equipment. For example, borders of the finishing line, line of spades, marking of borders of the game field.

If in the hall the platform only for one game or several platforms which aren't blocking each other, then color of lines, as a rule, has to be white (Fig. 2). When imposing on one platform of half of lines of two platforms blocking each other (the thicket basketball and volleyball) should designate lines of one of them in orange color. At three platforms which are imposed at each other it is expedient to use also black color.



*Fig. 2. Example of color scheme of a marking of the sports ground. Sports and improving Dolphin complex, Kansk.*

Speaking about safety of movement of physically disabled people, it is necessary to remember requirements of observance of the minimum distances of borders of sports grounds from motionless objects (the walls, columns acting designs). And in it the large role is also played by correctly beaten color schemes (Fig. 3).



*Fig. 3. Examples of color scheme of a marking of horizontal and vertical communications*

**Conclusion.** Creation of color medium demands an integrated approach to definition of the purposes of use of color in architecture and design. The architect solves a complex of problems and by means of color taps logic of volume and spatial structure which is inseparable from creation of psychophysiological comfort of the person. Ergonomic researches and developments is an integral part of after-treatment of disabled people which, according to experts of World Health Organization, represents process which purpose are prophylaxis of disability during treatment of a disease and the help to patients in achievement of the maximum physical, mental, professional, social and economic full value. Ergonomists have to continue to conduct researches and to find together with designers and designers original design solutions of instruments of labor and devices to them, the organizations of jobs and improvement of the conditions allowing to compensate significantly or even completely to exempt the person from the restrictions bound to this or that type of disability.

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### **ПРИНЦИПЫ ОРГАНИЗАЦИИ И СРАВНИТЕЛЬНЫЙ АНАЛИЗ ОТЕЧЕСТВЕННЫХ И ЕВРОПЕЙСКИХ ВЕЛОТРЕКОВ**

**Цель исследования.** Определение главных критериев и принципов проектирования современных велотрекков.

#### **Степень разработанности проблемы**

Тема европейского велотрека была рассмотрена архитектурной группой Hopkins Architects в Лондоне [1], а велотрека прошлого столетия на острове Крылатском была разработана Московским научно-исследовательским институтом отдыха, спорта и здравоохранения автор-

ским коллективом, в который вошли архитекторы Н. И. Воронина и А. Г. Оспенников; инженеры конструкторы: В. В. Ханджи, Ю. С. Родиченко; технолог А. В. Зыченков [2]. Нормы проектирования были разработаны авторским коллективом, в который вошли Аристова Л.В., Быкова Г.И., Голубинский А.П. [3].

#### **Постановка проблемы**

Сегодня спорт занимает все больше места в жизни не только украинцев, но и людей со всего мира. За последние годы