

ARCHITECTURE

Formation of recreation cores in areas of multi-storey residential developments

O. Meshcheryakova

Institute of Architecture, Lviv Polytechnic National University, Lviv, Ukraine
Corresponding author. E-mail: olya.meshcheryakova@gmail.com

Paper received 29.06.19; Accepted for publication 10.07.19.

<https://doi.org/10.31174/SEND-NT2019-200VII24-02>

Abstract: The aim of the paper is to present the current state of urban outdoor recreational spaces, explore its content and the functional structure, principles of arrangement and attractiveness to the city residents by the example of Ternopil. Conducted surveys gives the possibility to distinguish the needs in places for outdoor recreation for people within their residential areas and highlight the main problems of existing recreational cores.

Keywords: recreation, recreational cores, multi-storey residential living areas, urban recreation.

Introduction. The primary requirement of modern society is the formation of a comfortable, attractive, safe environment in the residential urban areas, which will contribute to the recreation and maintenance of public health. These components are interconnected and interdependent, and the means of their solution is the formation of multifunctional recreational cores appropriate for different age categories needs. However, in most cases, recreation within the city has a cultural and consumer's form. The problem of organizing poly-functional recreation cores in residential areas of the city determines the relevance of this work.

Modern researches focuses on the fact that it is the ability to rest and restore the physical and spiritual health of urban residents within the territories of their residence is the key to a healthy society [1–3]. To do this, it is necessary to develop urban recreation and form the appropriate recreational cores, which will be available to different segments of the population at any convenient time for them.

Goals. The purpose of the study is to formulate a reasonable assessment of the real situation of the functional organization of recreation cores in the city on the territory of residential multi-residential buildings and examine the real needs of residents of multi-residential residential areas on the example of Ternopil. It can serve as a basis for formulating an urban planning rationale for the development of recreation cores in residential areas of cities.

Literature review. The theoretical basis of the study is formed in researched works of Panchenko T., Rodichkin I., Osichenko G. Danylko N., Golub A., Zubrichev O., Novikov V., Wojciechowski N, Ujma-Wąsowicz K., Lis A., Pilarchyk A. and others.

The definition of recreation adopted in the study, which at the interdisciplinary level, is interpreted as a way to restore physical, spiritual and mental forces, as well as cultural, educational and sports activities of people associated with a system of certain means in specialized territories in their spare time [4–7]. The need to implement these processes in the immediate proximity of places of living causes deepening of knowledge about recreation in the theory of urban planning and the outlining definition “urban recreation”- a method of short-term recreation for residents associated with the habitat of various age categories in conjunction with functional and planning structure of the city. In the study “city” is the type of settlement is accepted, which, according to the Ukrainian classification of cities, differs in size, is multifunctional and has an expressive territorial planning organization. Urban recreation can take place in the defined landscape and recrea-

tional areas of the city, specially adapted architectural and urban planning facilities outdoor (playground, sports facilities and other parts of the city that forms recreational areas for inhabitants of residential developments) and indoor (theaters, cinemas, gyms etc.) types [8, 8]. The concept of “urban recreation” is not limited with the definition of ways to rest for city residents, but is connected with the formulation of basic provisions defining the techniques and principles for organizing recreation cores in the city. The recreational core specifies the phenomenon of urban recreation in the context of urban planning and is considered as a place of concentration (concentration) of recreation activity that has a visually and physically defined territory. The rules that regulate it correspond to the legal principles defined at the legislative level.

Material and methods. To achieve the objectives of the study, the process covers a three-stage method: the first is the identification recreational cores in the structure of the residential areas in the city of Ternopil; the second - researching the characteristics of their functional and planning organization and conducting a survey among its actual or prospective users; the third is the analysis of the results and identification of problems; the fourth is the formulation of conclusions.

The methodological basis of the study was general scientific and special methods at the empirical and theoretical levels. The general scientific methods of research included groups of methods - data collection and accumulation of facts: field surveys, observations (active - searching and fixing the desired angle of vision of the recreational cores and purposeful - fixing attention only on the object of study), comparison (comparison of selected indicators, functional processes, phenomena, a functional planning solution among themselves), photographic recording (recording images of the current state of use, space-spatial solution of the Recreation cores with the help of special media), measurements, surveys, description. Special methods for the study - the use of architectural, urban planning and interdisciplinary approaches. The complex of special research methods includes: urban planning analysis (location of recreation cores in the structure of residential areas, functional zoning analysis), sociological survey, morphological description.

A survey of residents opinion was conducted by direct interviewing residents (face to face) that was carried out in May-July 2018 in Ternopil's areas of multi-storey residential developments among 126 respondents (56.3% of respondents- women, 43.7 men; 12.7% children 10–13 years old, 16.7% - young people 13–16 years old, 30.2% - young people 16–24 years, 19.0% - adults aged 25–44 years old, 6.3% -

45 -60 years old, 14.3% - 60-75 years old, 0.8% - 75-89 years). Respondents in each of the selected locations were interviewed in a standard form on a half-closed questionnaire (combined - with open answers and closed, where it was suggested to choose one of the available options). The survey was designed to obtain the basic information about the resident (gender, age, family size, presence of children), facts about open recreational areas that are available to them in the proximity to their homes (types of recreation, character of the property (private, semi-public, public), limits of walkable distance from recreational cores to their dwellings, frequency of use of recreational cores), their attitudes and preferences regarding the use of recreational cores (about how they are used, other additional forms of activity that have place on the recreational objects, their ideas about comfort, safety and control, what new recreational spaces they would like to have, what can be improved in existing open spaces). They also highlighted the most important elements that should be present in a place available for recreation. The results of the survey allows to supplement the factors and objectives of the design.

Results and discussion. For the study of the recreation cores in the areas of a multi-storey residential developments the city of Ternopil was chosen. It is one of the cities in the western region of Ukraine with characteristic clusters of residential multi-family apartment buildings that were built in the 70-80s. Problems associated with territories of this type

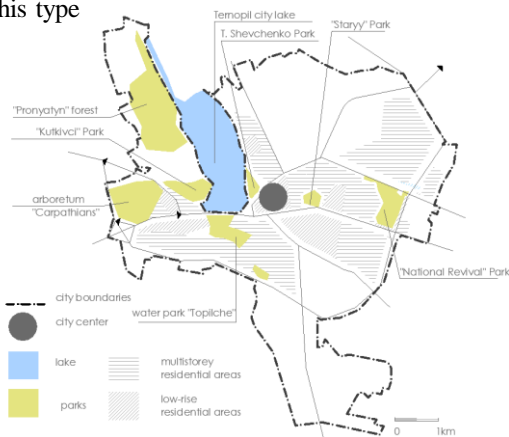


Fig. 1. Territorial organization of Ternopil

These areas are characterized by residential development represented mainly by 5-9 storey apartment buildings - typical for neighborhood planning of a period of 70-80 years with spacious courtyards (figure 2), often exaggerated courtyard areas connected by pedestrian alleys. The functional planning organization of the territories was carried out in accordance with the requirements of the town planning of the Soviet period: children's play- and sportsgrounds, recreation places for adults, green areas, driveways, parking lots and household sites. These requirements fully met the needs of that-day society and moved to the regulatory standards of independent Ukraine without significant changes [10]. According to the norms, the obligatory presence and the minimum areas of recreational areas as part of the territory of multi-family residential buildings is defined depending on the prospective amount of residents. Thus minimum area of playgrounds for children of preschool and young school age is 0.7 sq. m per person, for recreation of the adult population – 0.1 sq. m per person and areas for physical exercises – 0.2 sq. m. per person. For providing acoustic comfort for people, the distance from the indicated recreational areas to the win-

in Ternopil are also characteristic for other cities in the western region (Ivano-Frankivsk, Uzhgorod, Rivne, Lutsk).

Ternopil is a city of regional importance, located in the central part of the Western region of Ukraine. The population is 218, 653 thousand people. The area of the city, according to the existing boundary, is 4283 hectares. Multi-apartment residential buildings areas occupies up to 478.53 hectares, which is 11% of the total area (or 85.1 % of the total residential area). And according to the Project City's Masterplan [9] to 2031 the territory of multi-storey residential buildings will increase for 166.6 ha more. Therefore, the question of providing comfortable living environment in areas of multi-storey residential developments that provide recreational facilities is very important both for the perspective new developments and for improving the existing ones. Study of the process of modernization of living environment shows that, unfortunately, without a comprehensive, scientifically based assessment, in most cases, are concentrated on improving only material content (replacement of gaming or sport equipment) and landscaping elements (coatings, outdoor lighting etc.).

The territory of Ternopil consists of 9 residential areas (figure 1): 5 - historically established; 2 as a result of connection of the surrounding villages, 2 that build up according to the city's Masterplan.



Fig. 2. View on Ternopil's residential area «Alyaska», typical for neighborhood planning of a period of 70-80 years

dows of residential and public buildings must be at least 10 m for recreational ground for adults, 12 m - for children's and, depending on noise characteristics, from 10-40 m - for sportsgrounds. Therefore, the urban regulatory documents are in process of revising and improving [11]. Project of DBN B.2.2-12: 2018 in September, 2018 were developed, were for example minimum area for recreational cores for adults increased to 0.2 sq. m per person and for physical exercises in 10 times – 2.0 sq. m per person. However, with the introduction of new standards, the question of organization of recreation cores, which would cover the needs of all groups of the population, remained unsolved. From the very list of recreational grounds, we can see the absence of a compulsory arrangement of places for young people recreation and defined peculiarities of location and organization for elderly people recreation. The current state of the formation of comfortable and accessible recreational cores in living environment requires new approaches that will fulfil the contemporary needs of society in the context of sustainable development of the city.

To gather information about current situation in urban recreation the author conducted site surveys of 826 recreational cores within the residential areas of Ternopil in the period of 2017-2018. For the detailed analysis, one of the districts of the city (area – 1.028 sq. km) was selected (fig.3). The characteristics of analyzed objects were systemized through photo, mapping and tabular representations. The current state of the recreation cores was evaluated with the following criteria: target age-group (children, youth, adults

and elderly), its function (play, sport, physical exercises, social, creative and educational), quantitative indicators (dimensional characteristics of space, area), functional area saturation (monofunctional, polyfunctional), types of contents and activities, layout character (its shape, peculiarities of planning structure- compact, linear), its location, degree of enclosing, number of observed users, time of usage, degree of attraction.



Fig. 3. Territory of detailed survey, a-“Sonyachnyy” district, mapping recreational cores: b- recreational core of group of buildings represented with typical playground and gazebo for adults

During the observation period (during 21-27 of May, 2018) on 2 locations (fig.3b, fig.4a), which was carried out from 10:00 to 19:00 on weekdays and weekends, most of the visitors that spend free time at the recreational cores and surrounding areas: younger schoolchildren (58% from 13.00), mothers with children (15% - during day), pensioners (with small children (10%, mostly in morning hours till afternoon) independent recreation -13 % from 14:00). Young people and adults spend a minimum of time on the residential areas on working days (4% in the evening).

analysis of the existing state showed that not all age groups are provided with organized places for recreation, the individual needs of each group are not taken into account. There are practically no places for adults and older people recreation (single gazebos and benches for sitting). Recreational cores for young people within the city are organized mainly in city parks (major types - skate parks and sports zones), however, the daily need of young people for recreation within residential areas is completely ignored. Groups of young people, observed during research, used for gathering children`s playgrounds or other places not purposed for recreation (retaining walls, stairs etc.).

Most objects are monofunctional. The main types of recreation cores are children`s playgrounds (82%), sportsgrounds (13%), places for adult recreation (4%). The

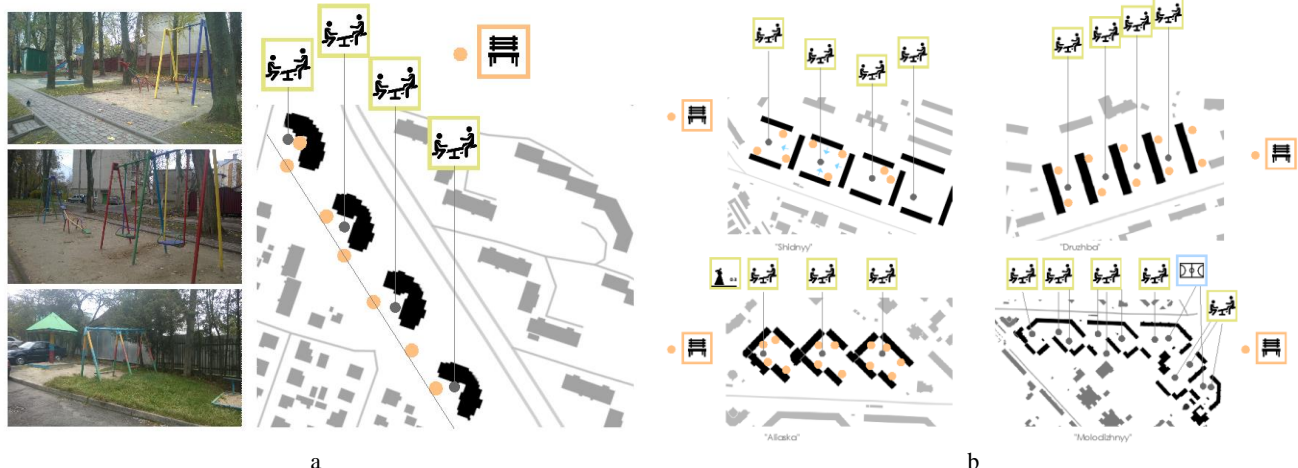


Fig. 4. Organization of recreational cores near residential development on the example of residential areas of the city of Ternopil

The character of the residential areas planning determined the openness of the yard territories, so the type of property of majority of the analyzed objects (91%) is semi-public. That means that they are intended for use by residents of nearby houses, but at the same time - open and accessible to other people. Some of the recreational cores that belong to the building`s territory of newly built houses or those that creat-

ed an association of residents and defined their closed private territory, belong to objects of limited use exclusively by residents of a building or groups of buildings and do not provide open access for other residents of the area. Last may cause lack of recreational cores for residents nearby, as those objects that used to be in common use becomes private property.

According to its area, the recreational cores are divided into small, medium and large. The area depends most often on the type of use (public location, public) and its location in the structure of the residential area (recreational core of building or group of buildings, the projected load (number of visitors). Analyzed objects were categorized in three groups: small - sizes from 10 to 500 sq. m., medium - from 500 to 3000 sq. m. and large - more than 3000 sq. m. The morphological diversity of spatial schemes can be reduced to three groups of cores along the outline of the plan or outline: simple geometric (regular geometric shapes - rectangular, triangular, circular), derived from simple shapes (changing

proportions, changing angles) and complex (a combination of simple shapes - intersection, overlay, exception, repetition).

From the analyzed objects, 98% of the playgrounds are located on flat plots, without any hills or any other level differences. Such planning decisions do not satisfy the needs of children in movement and "conquering peaks". Observations confirm that often children choose sloping areas with coatings (mainly parts of footpaths) or create homemade height differences (Fig. 5c). Such solutions reduce the comfort of the territory (the conflict of functions: walking route - playing area)



Fig. 5. Organization of recreational cores near residential development on the example of residential areas of the city of Ternopil a- Sport facilities, b- children's playground, c- self-made springboard

Degree of attraction of recreational cores was collected from the interviews results. The interviewees were asked to estimate the level of visual attractiveness, comfort of using, and state of equipment of the recreational cores near their buildings in grades from "very bad", "bad", "good" and "excellent". Only 2.6 % were totally satisfied with the current state and evaluated as "excellent". The average answer was "bad" or "good". And 52 % answered that they would spent more free time for recreation if comfort conditions improves.

It is also important to note that analysis of design solutions and built objects of recent years shows positive trends in the formation of recreation cores. Many private investors, while building new residential buildings, beginning to pay attention to the residential environment outside the building, realizing that organizing recreational cores is an important element in creating a comfortable living environment that bases on principles of uniqueness, attractiveness, availability for all, functional zoning,

Conclusions. Analysis of the current state of recreational cores in Ternopil gave the information about current state of recreational cores in the areas of multi-storey residential developments that are common to other cities of the western region of Ukraine.

The main problems of the formation of recreational cores in areas of multi-storey residential developments in Ternopil can be defined as:

- diversity: not all age groups are provided with organized places for recreation, the individual needs of each group are not taken into account;
- the degree of functional arrangement and equipment is low, contents do not suit the users requirements
- lack of attractiveness, diversity of playing equipment, aesthetic pleasure; most of the objects are typical and do not form the uniqueness of place;
- not-satisfying technical state (old equipment, ruined surface coverings, pavement, connection of materials, etc.);
- lack of means, providing additional comfort (lighting, sun shading, shelters etc.)
- necessity of implementing principles of universal design – inclusive, available for all age groups and levels of mobility.

Creating recreational cores within areas of multi-storey residential developments is essential for creating healthy society. The recreational cores as the inherent part of the residential environment, must be adequately equipped, organized and arranged; accessible, attractive and fulfill needs of all groups of people in recreation. Further research will be aimed at developing recommendations on the organization of recreational cores on the territory of multi-family residential buildings.

REFERENCES

1. Edwards P TAD. A healthy city is an active city: A physical activity planning guide. Copenhagen, Denmark, 2008 p.79.
2. WHO. Global Recommendations on Physical Activity for Health 2010. Geneva: World Health Organization: Geneva;
3. Cranney L, Phongsavan P, Kariuki M, Stride V, Scott A, Hua M, Bauman A. Impact of an outdoor gym on park users' physical activity: A natural experiment. *Health & place*. 2016; p.37, pp.26–34.
4. Stauskas OP. Urban planning of districts and recreation centers. L.: Stroyizdat; 1977, p. 164.
5. Nudelma MS Socio-economic problems of recreational environmental management. K.: Naukova Dumka; 1987
6. Shulyk BP. Methodological foundations of the formation of recreational systems in Ukraine: Thesis for the degree of Doctor of Architecture: 18.00.01 - Theory of Architecture, restoration of architectural monuments; 2008
7. Lis A. Struktura przestrzenna i społeczna terenów rekreacyjnych w osiedlach mieszkaniowych Wrocławia z lat 70.-80. ubiegłego stulecia. Wrocław: Wydawnictwo Uniwersytetu Przyrodniczego; 2011
8. Urban planning. Designer's Handbook. To.: Ukrhstroyinform; 2001.
9. Ukrainian State Research Institute for Urban Design "Dipromisto". General Plan Ternopil. Kiev; 2008
10. DBN 360-92 **. Town planning. Planning and development of urban and rural settlements.
11. DBN B.2.2-12: 2018. Planning and development of territories.