

1. INTRODUCTION

Worldwide, the demand for recreation and rehabilitation is increasing every year. Unfortunately, the number of people with disabilities has also increased recently. It calls for establishment of rehabilitation centres. One of the institutions, directly dealing with such patients, is a hippotherapy rehabilitation centre, as hippotherapy is often used as a rehabilitation technique after many diseases. The architect shall consider the needs of patients, personnel, and horses, acting as physicians, to provide the best possible conditions.

2. RESEARCH FINDINGS

Urgency of the research is induced by the need for widespread use of hippotherapy in medical and rehabilitation institutions. After all, the number of people in need of rehabilitation is increasing every year. Currently, these are children and adults with disabilities, the elderly, athletes, military men and migrant children from the occupied territories.

There are many rehabilitation centres and treatment methods available. "Hippotherapy" is one of these methods. The treatment is performed with the help of a horse.

Hippotherapy is a physical, occupational, and speech-language therapy treatment strategy that utilizes equine movement as part of an integrated intervention program to achieve functional outcomes (Gula, 2012, p.21).

Having analysed the world experience in designing of hippotherapy rehabilitation centres, as well as having studied a number of scientific works, regulatory documents (State Construction Norms of Ukraine DNB V.2.2-17-2006.), (State Construction Norms of Ukraine B.2.2-10-2017), (State Construction Norms of Ukraine B.2.2-13-2003. 2004), (State Construction Norms of Ukraine B.2.2:2018), it can be concluded that no practical recommendations have yet been developed to establish such an institution. Medical horse riding centres are discussed in some regulatory documents of the Russian Federation (Ministry of Construction, Housing and Utilities of the Russian Federation, 2017), (Regulations: SP 149.13330.2012). According to SP 149.13330.2012, the entrance lobby in a medical horse riding department, a waiting room, a hippotherapist's office and massage rooms can be united with the stable building. This fact, according to the author of this research, may be related to the hippotherapy rehabilitation centre, when the centre is monofunctional and single-type. Otherwise, when the centre is designed to be multifunctional and multi-type, the solution will not be convenient, but incur additional financial costs.

Therefore, considering the typology of hippotherapy rehabilitation centres, developed by the author, it is necessary to provide practical recommendations for the architecture formation for such centres.

Hippotherapy functioning in the institution shall not be considered as the one, occurring within a single building. It is most likely a complex system of interrelated elements, forming this rehabilitation technique.

The hippotherapy centres operate both as separate institutions and under equestrian clubs/complexes/schools, children's camps, as well as sanatoriums and rehabilitation centres.

Presence of various forms of hippotherapy has a certain effect on the institution type (Moscow equestrian club for the disabled, 2003).

According to the functional purpose the hippotherapy rehabilitation centres can be divided into monofunctional and multifunctional types (Fig. 1b).

Monofunctional institutions are the ones where only one function is dominant. Most often it is therapeutic. Also, the housing function and food function may be present. Use of all types of hippotherapy is also possible. Besides hippotherapy services, the institution provides a number of other therapeutic services such as massage, movement therapies, swimming in a pool, inhalation, treatment using the latest computer technology, etc.

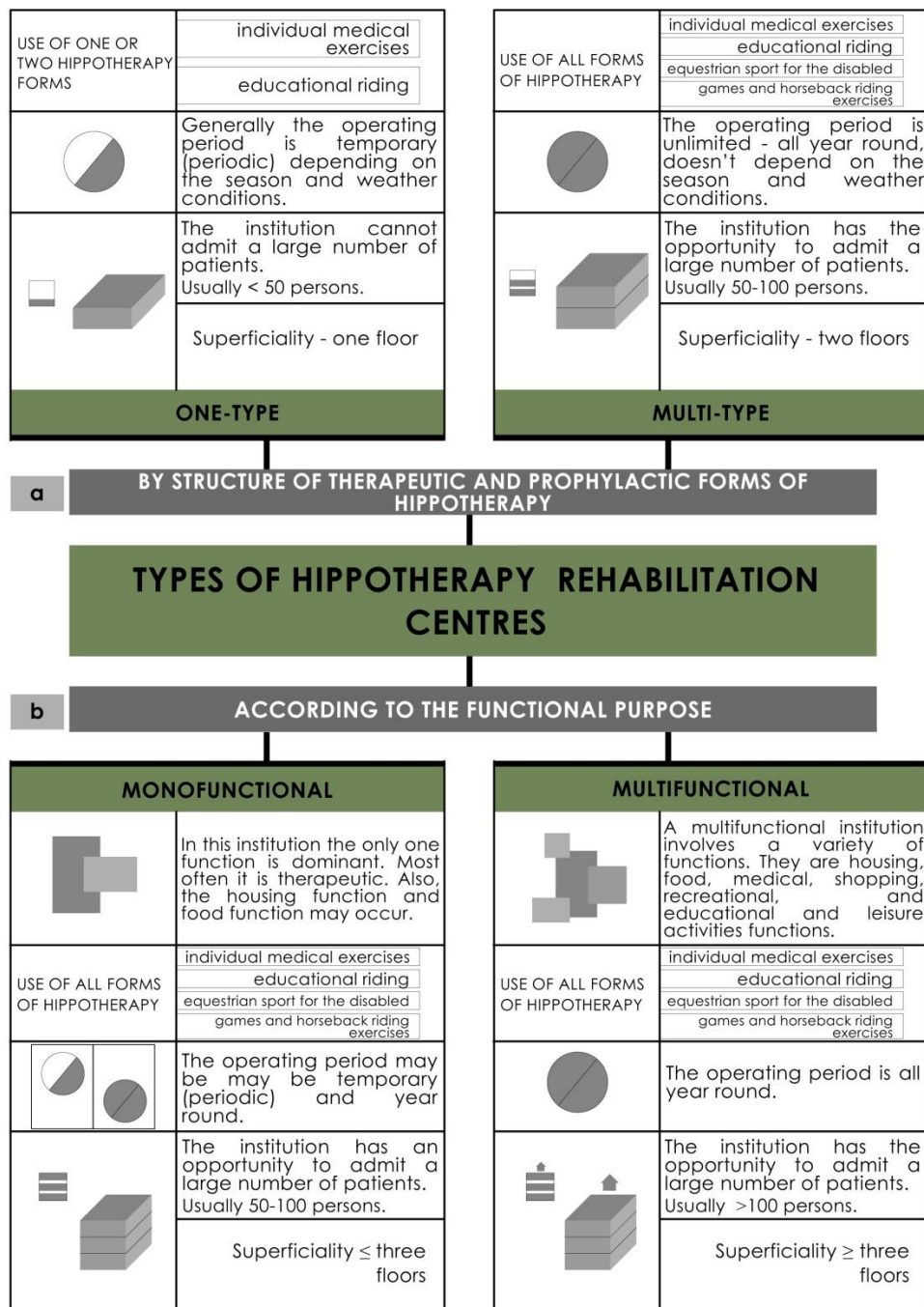


Fig.1.Types of hippotherapy rehabilitation centres. Source: the scheme developed by Zoriana V. Obynochna Ryc. 1. Rodzaje ośrodków rehabilitacyjnych hipoterapii. Źródło: schemat został stworzony przez Zorianę Obynochną

Operating period may be temporary (periodic) and all year round. The institution can admit a large number of patients. There may be no more than 3 floors.

A multifunctional institution involves a variety of functions. They are housing, food, medical, shopping, recreational, educational and leisure activities functions. As for hippotherapy - it can be one-type and multi-type. The operating period is all year round. The institution can admit a large number of patients. There are no more than 3 floors.

Also, hippotherapy rehabilitation centres are divided according to the structure of preventive health-care activities: one-type and multi-type (Fig. 1a). The one-type centres involve use of usually one or two types of hippotherapy. Usually, it is a therapeutic horse riding and "hippotherapy itself". Generally, operating period is temporary (periodic) depending on the season and weather conditions. The institution cannot admit a large number of patients. There is no more than one floor.

Multifunctional institutions can use all types of hippotherapy: therapeutic horse riding, "hippotherapy itself", equestrian sport for the disabled, other types of hippotherapy such as vaulting, carriage driving, games and horseback riding exercises. Also, there may be an animal health centre for supporting horses in this institution. The operating period is unlimited - all year round, doesn't depend on the season and weather conditions. The institution can admit a large number of patients. There are no more than 2 floors.

A significant feature of the hippotherapy rehabilitation centres is an available place for hippotherapy classes (indoor and outdoor riding hall (arena)) and a place for keeping horses (stables, paddocks, chutes, horse walkers, veterinary area, storage room for hay, etc).

Correct arrangement of a riding hall and open arena for hippotherapy classes hold a special place in the hippotherapy rehabilitation centre planning. As horses shall always be present at the hippotherapy rehabilitation centre, special attention shall be paid to all the animals' long-term needs.

The author singled out the following types of arrangement of the riding hall, open arena, ring entrance, stables and main buildings in the hippotherapy rehabilitation centre structure (Fig. 2, b).

Pavilion type is not recommended for use in cold climates. It may be used in areas with a considerable land relief drop. It is essential to ensure the shortest possible distance from the stable to the riding hall.

Unit type allows achieving simultaneous isolation of functional zones and keeping short connections between separate groups of premises, and also separate buildings: from the stable to the riding hall. It is suitable in all climatic conditions.

Centralized type provides maximum space saving, reduces communication length, and minimizes heat loss. It is recommended for use in cold climates.

Combined type ensures optimum interconnection among premises. It is suitable in all climatic conditions (Obynochna, 2019, p.80).

Having studied the experience of hippotherapy rehabilitation centres planning and functioning, it can be concluded that the multi-type multifunctional type of hippotherapy rehabilitation centre is the best one. The author tried to develop a structural model of such institution (Fig. 2, a). The Figure shows arrangement of all hippotherapy rehabilitation centre components. Type of buildings and structures according to their arrangement in the area is a unit-type one.

Considering this type of institution, a considerable part of the territory is occupied by the rehabilitation zone, because all forms of hippotherapy are available here. Two riding halls act as volumetric dominants. The size of a large arena 40x60 m, a small arena is 20x40 m. The small arena is designed for simultaneous work of maximum three horses. As a

rule, in a small arena, classes are conducted using only one hippotherapy form - individual medical exercises. A large arena is designed for all other hippotherapy forms, as well as for horse competitions.

As noted above, the best option for the layout of buildings and structures is of a unit-type, so we can observe that arrangement of the main structure, a large riding hall, ring entrance and stables belong to this type (Fig. 2a).

Open arenas take a considerable part of the territory. The arena for individual medical exercises is one of them. It is open for patients when weather conditions are favourable. The sizes of this arena are 20x40 m. It shall be arranged as close as possible to the main structure and entrance area, thus being isolated from noise and prying eyes. Other open arenas are required for all other forms of hippotherapy: a field for driving classes (competition a - drainage), 100x40 m in size, cover - grass (sometimes fine chips); field for driving classes (competition in - marathon (polises/tracks). is held in 3 stages: warm-up, step, obstacle course (labyrinths, ditches, hills, water obstacles); a field for training in driving (competition c - parkour), size 120x70 m, cover - grass (sometimes small chips); also a field for training in voltige, min 20x25 m in in size, stands are arranged along arena circle, it is possible to practice on a large arena.

Paddocks occupy a considerable part of the territory. There shall be spacious paddocks, where horses will be in a herd and individual paddocks of 0.3-1.0 ha per 1 head should be provided. They can be located either in remote parts of the territory or united with stables and have a direct exit from the standing stall.

When a multi-type centre territory for training of sporting horses is planned, as well as for training horses of the hippotherapy technique, it is necessary to provide mechanical horse walkers, a training round pen and a springarten (a construction for the guidance of young horses without a rider in the form of a fence restricted by obstacles. As a horse is not able to pass around it, moving on the springarten, the horse is forced to jump over them).

Considering that horses, involved in hippotherapy, take over the patient energy, they also need rehabilitation after training. For this, if the institution can afford this, a rehabilitation centre for horses and a veterinary centre can be provided on the territory. They shall be located in the utility zone away from the main structures and open arenas.

When the hippotherapy rehabilitation centre is planned, an architect shall ensure the following conditions: convenient and short intercommunications between volume units, correct arrangement of the volume components according to parts of the world, isolation of functional zones, good insulation, protection against drafts, and minimal distance from the stable to the riding hall.

One of the problems during a patient preparation for training is his fear of such a majestic animal as a horse. To prepare a patient for real classes, the author proposed to include a room for horse riding training in the list of hippotherapy rehabilitation centre premises (Fig. 3). It will serve as a training space, as well as an observation room, since it is possible to monitor the patient's adaptation to the animal. Also, considering that electromechanical computer-controlled model of a horse, will allow, depending on the virtual situation route, to change the body shape, position of individual parts, it is possible to observe the dynamics of the effect of certain horse movements on the patient, thereby, it will be possible to select the most appropriate types of training and route for a specific patient.

It can be concluded that planning of a hippotherapy rehabilitation centre is individual and shall be based on specific tasks for the design, financial capacity and landscape, natural and climatic features of the site, allocated for construction. The typology and proposals, provided by the author, can serve as a "tip" for designers and architects when planning a hippotherapy rehabilitation centre.

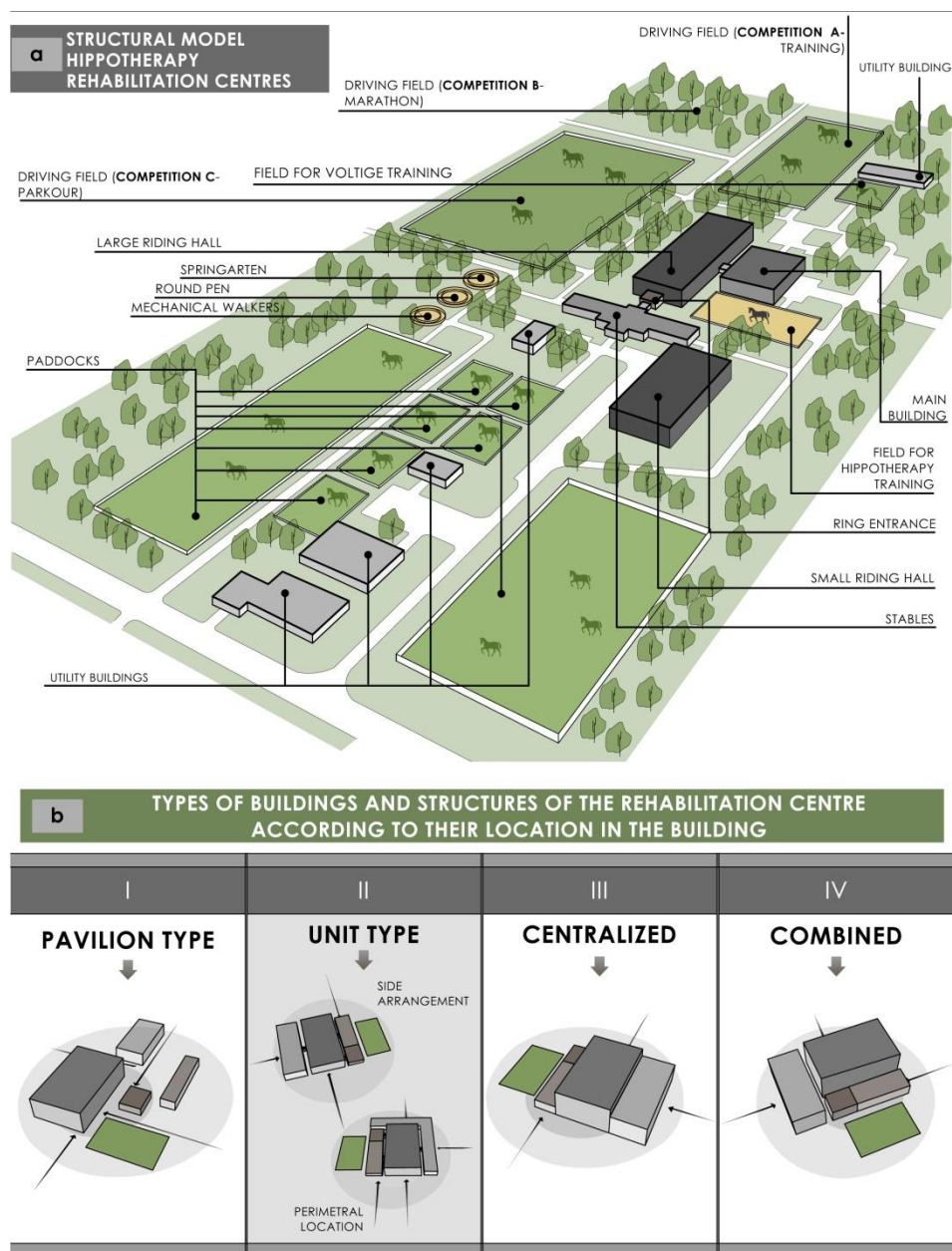


Fig.2. Structural model of the hippotherapy rehabilitation centre. Types of buildings and structures of the hippotherapy rehabilitation centre according to their location in the building. Source: the scheme developed by Zoriana V. Obynochna

Ryc. 2. Model strukturalny centrum rehabilitacyjnego hipoterapii. Rodzaje budowli oraz konstrukcji centrum rehabilitacyjnego hipoterapii odpowiednio do ich rozmieszczenia w zabudowie. Źródło: schemat został stworzony przez Zorianę Obynochną

3. CONCLUSIONS

The presence of certain hippotherapy types, as well as financial solvency will have a great effect on construction of hippotherapy rehabilitation centres. After all, hippotherapy

classes have a considerable positive effect on patients' health with simultaneous use of other rehabilitation techniques.

As a result of this research, the author proposed a typology of hippotherapy rehabilitation centres (according to the structure of therapeutic and prophylactic forms of hippotherapy: single-type, multi-type; by function: monofunctional, multifunctional), their features were identified and proposals on the type of buildings and structures of the hippotherapy rehabilitation centre according to their arrangement in the building, the training room for riding classes and certain parameters were proposed.

The research results can serve as a basis for successful design of buildings of hippotherapy rehabilitation centres.

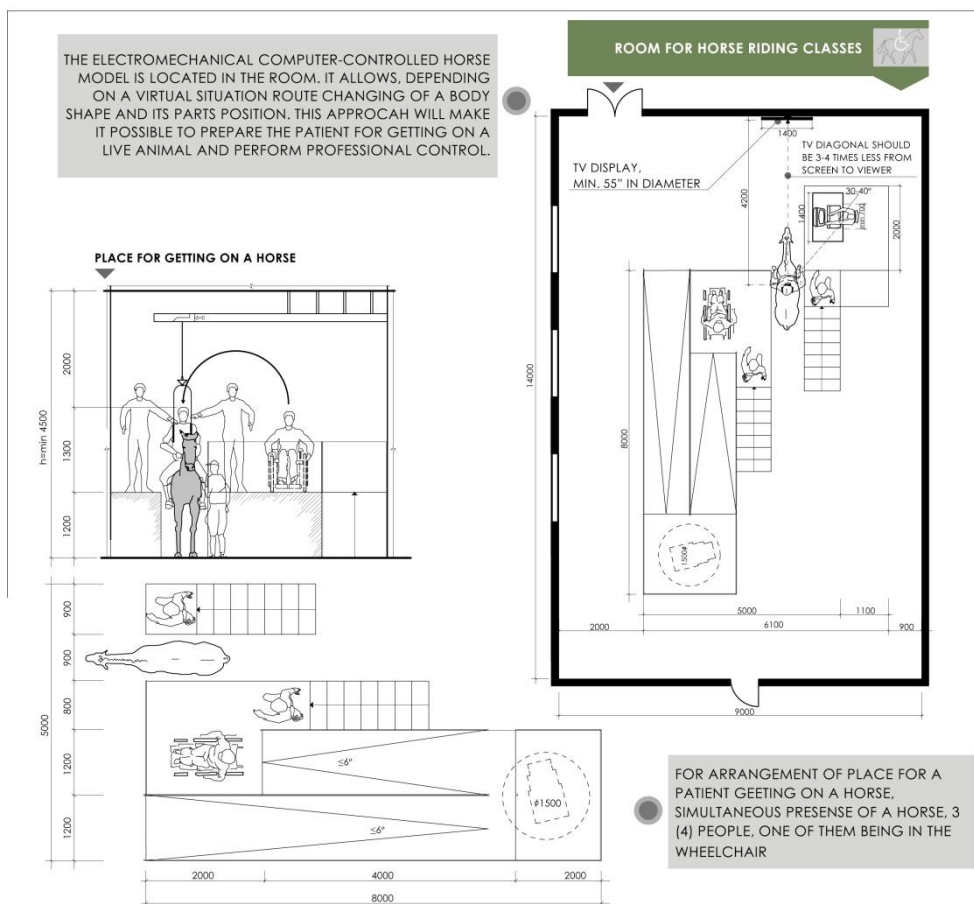


Fig.3. Parameters of space used for patient riding training Source: the scheme developed by Zoriana V. Obynochna

Ryc. 3. Specyfikacja pokoju przeznaczonego do nauki jazdy konnej pacjenta. Źródło: schemat został stworzony przez Zorianę Obynochną

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