

EVALUATION OF THE QUALITY OF THE PHYSICAL SPACE IN GYM AND BODYBUILDING GYMS IN THE CITY OF RECIFE / PE

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Abstract: This document presents the results of case studies carried out in small and medium-sized gyms in the City of Recife, pointing out aspects related to the quality of the physical space, such as: accessibility, ergonomics, work safety and health. The work evaluates the buildings through the existing norms related to the subjects.

Keywords: Architectural Accessibility. Post occupation assessment. Ergonomics.

INTRODUCTION

According to scholars, the Greeks were responsible for the emergence of the first schools aimed at preparing athletes for gymnastic displays in public. Greek pioneering was born from the search for a healthy body, healthy mind and the ideal of human beauty. Gymnastics defined by Plato and Aristotle was a practice that emphasized beauty through body movements.

There is little information about the emergence of gyms in our country. Traditionally, sports clubs were associated with the practice of sports, due to changes in the behavior of the population and the search for regular physical exercise. In this scenario, the emergence of the first gymnastics academies occurred.

For some decades, a significant portion of the population, both in Brazil and in other countries, has been changing its habits, increasing the search for physical activities. The reflection of this can be seen in the increase in the number of academies of fitness. What at first was seen as a fad gained credibility due to research by scholars in the area of human physiology, which allowed them to state that the practice of exercises is important throughout life and not only in childhood in order to improve coordination motor.

In addition, there was the technological development of specific equipment for this area, which increased the number of fans in

the search for a perfect body.

On the other hand, it is noticed that the scarcity of adequate public spaces and the lack of security in the practice of outdoor sports have made gyms become a main attraction. Since then, they have been looking for more and more increments to attract a diverse clientele, so much so that several gyms go beyond services focused on physical activities and offer other advantages such as a beauty salon, body aesthetics, shopping spaces, among others. And there are still those that bet on social areas for customers interested in leisure.

However, in the midst of so much diversification of gym space, there is still little information, legislation and studies aimed at regularizing the quality of the physical space of gyms. And in view of the new construction concepts that aim at accessibility, quality in the development of activities, we try to observe mainly the internal spaces and the disposition of the equipment, as well as the division of the environments of the gyms.

The present study will evaluate small to medium-sized gyms in the city of Recife, observing basic concepts for the well-being of the users of these establishments, aiming to diagnose the quality of the architectural space in relation to man. This study will address issues such as accessibility, ergonomics, efficiency in the development of activities, among others.

GOALS

GENERAL GOALS

To evaluate the quality of physical spaces in gyms and bodybuilding in the city of Recife/PE.

SPECIFIC GOALS

Raise, if any, legislation and regulations aimed at regulating the construction of gyms and bodybuilding in the city of Recife;

Study concepts related to the quality of the physical spaces of gyms and bodybuilding;

Elaborate an instrument to evaluate the quality of the physical spaces of gyms and bodybuilding.

RELATIONSHIP OF MAN WITH ARCHITECTURAL SPACE

ACCESSIBILITY FOR ALL

The process of urbanization in urban centers has been taking place in a constant and accelerated way, mainly in cities that have a strong verticalization. And when disorderly and unplanned, it appears linked to various problems that affect the quality of life of the population. The lack of accessibility is one of the factors that most impact the quality of life of the population (AMORIM; GOMES, 2017).

NBR 9050, which is the accessibility standard for buildings, furniture, spaces and urban equipment, establishes criteria and technical parameters for the installation and adaptation of buildings to accessibility conditions, aiming to provide autonomous and safe movement of people regardless of age, height, or limited mobility or perception. Therefore, all spaces that may be designed, built, assembled or implemented must comply with the provisions of the standard.

Some parameters will be mentioned, which will be used in the evaluation of the levels of accessibility of the academies.

CORRIDORS AND DOORS

Corridors must be sized according to the flow of people, ensuring a lane free of barriers and obstacles. The following criteria must be observed:

- a) 0.90m for corridors in common use with a length of up to 4.00m.
- b) 1.20m for corridors in common use with a length of up to 10.00m and 1.50m for corridors with a length of

more than 10.00m.

c) 1.50 m for corridors for public use.

The doors must have a minimum clearance of 0.80m and a minimum height of 2.10m (see

figure 01). In doors with two or more leaves, at least one of them must have a clear span of 1.80 m. Toilet and changing room doors must have horizontal handles.

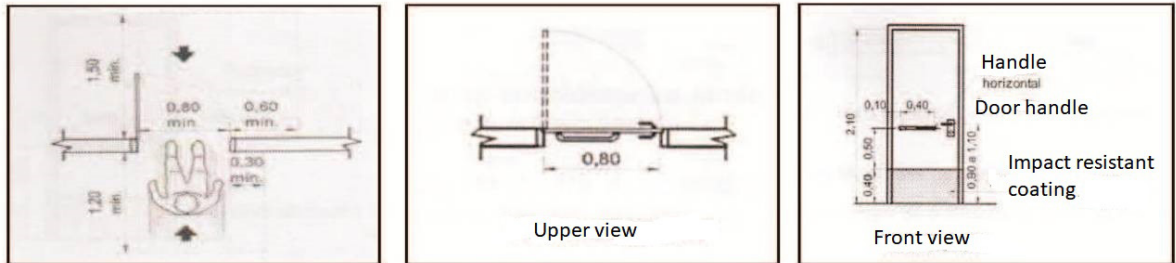


Figure 1 – Top and front views of 0.80m free span

Source: NBR 9050/2015.

BATHROOMS

The location of the support bars must meet the following conditions: next to the sanitary basin, on the side and at the bottom, horizontal support and transfer bars must be placed, with a minimum length of 0.80 m, at 0.75 m above the floor finished. The distance between the basin axis and the face of the side bar to the vessel must be 0.40 m. The back wall bar must be a maximum distance of 0.11m from its external face to the wall and extends at least 0.30m.

In the case of basins with a coupled box, the bar must be installed on the back wall, in order to prevent the box from being used as a support. The minimum distance between the lower face of the bar must be 0.15m.

When the basin is less than 0.43 m high and 0.45 m from the floor, it must be adjusted as follows: Installation of a tile at the base of the basin, which must follow the projection of the base of the basin, not exceeding its surroundings by 0.05 m.

The boxing for the sanitary basin must follow the diagonal, lateral and perpendicular transfer areas, as well as the 180° rotation area. A washbasin must be installed inside the

shower, in a place that does not interfere with the transfer area (see figure 02).

In the shower cubicle, a transfer area must be provided outside the cubicle, in order to allow a parallel approach, extending at least 0.30 m beyond the wall where the bench is fixed. Boxes must be equipped with an articulated or removable bench, with rounded corners and a non-slip and waterproof surface.

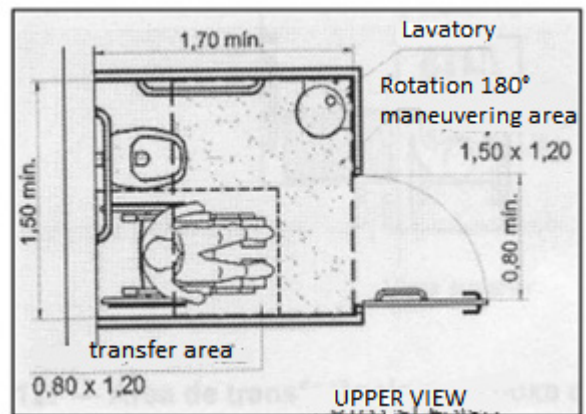


Figure 2 – Top view boxing – basin

Source: NBR 9050/2015.

ERGONOMICS IN GYMS AND BODYBUILDING

Over time, solutions have been constantly

sought to meet the evolving needs of human beings' relationships with their work activities. Ergonomics is applied in the study of the relationships that are established between man and work.

It is important to realize that the physical spaces must be adequate to be used and felt by people, otherwise they can cause serious constraints, and may even generate legal demands.

However, even with all the information available on the subject, these spaces are often not designed with the human being in all its dimensions in mind. For public spaces, constraints are generally more critical, as they involve social relationships.

Gyms, which are developing more and more, can be an example of a public space that can impose such constraints. And the factors are a bad sizing of the layout of the equipment

and the overcrowding of the gyms at peak times, for example at 7 pm.

When dimensioning a physical space and designing the layout of a gym, criteria such as:

- a) Anthropometric dimensions of the potential user population;
- b) Physical dimensions of equipment;
- c) Physical area available, with circulation and waiting areas.

When designing a physical space, the activity developed in it must also be evaluated. And then studied the situations and movements that the user will develop when practicing the activity.

To carry out these evaluations, it is suggested to use the dimensioning tables of the structure of the human body, available in the book *Las Dimensiones Humanas em los Espacios Interiores*, by Julius Panero and Martin Zelnik (see figure 03).

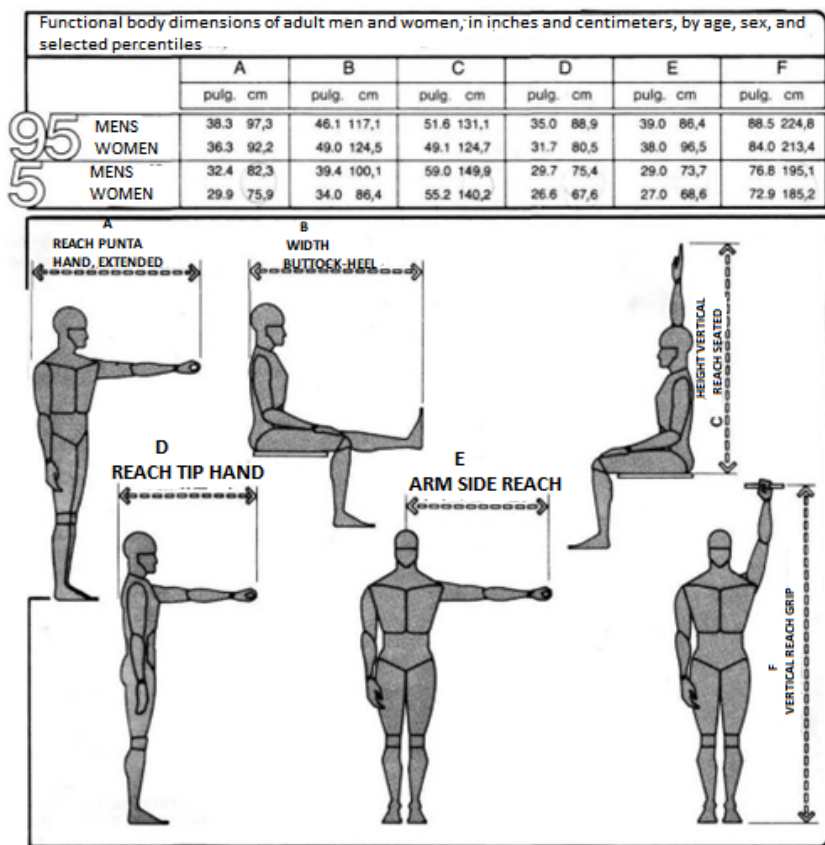


Figure 3 – Example of sizing table

Source: Human dimensions in interior spaces.

SANITARY SAFETY IN GYMS AND BODYBUILDING

The Sanitary Surveillance Division supervises, evaluates and grants operating licenses to establishments that carry out activities that affect health in the State of Pernambuco. Therefore, the "Health License" is mandatory for the operation of a gym and weight training facility.

The evaluation parameters of a property for receiving the Sanitary License are the technical aspects of hygiene, organization, physical area, equipment, employees, products, procedures, etc.

It is important to remember that every gym and bodybuilding academy must have a technician in charge. Legally qualified professionals, in this case, physical education professionals, are considered technically responsible for the establishment and equipment before the Sanitary Surveillance.

With regard to the resolution of the Federal Council of Physical Education (CONFEF) nº 056/2003, the actions of Sanitary Surveillance in the academies consist of:

- a) Check the identification documents and licenses of the establishment;
- b) Inspect the physical-functional structure;
- c) Check accesses for the public and for the transport of materials and waste;
- d) Check the existence of a sanitary sewage system, the supply of treated water and the existence of a reservoir;
- e) Check the existence of a medical clinic (sink equipped with liquid soap/antiseptic, paper towel, trash can, others) and medicines (list them);
- f) With regard to human resources, specify the types of

professionals, quantities and respective workload of each one, check the assistance and technical responsibility (registration in the Class Council, specialty and workload), including the technical responsible for the medical clinic.

- g) State of conservation and hygiene of equipment and accessories;
- h) State of conservation and hygiene of environments;
- i) Fire safety control.
- j) Coating of finishing materials;
- l) Ventilation and lighting of environments;
- m) Electrical and hydro-sanitary installations;

RESEARCH METHODOLOGY

To carry out this study, bibliographic research, photographic surveys, on-site research and interviews with professionals in the fields of medicine, nursing and physical education were used as a methodology.

An evaluation form was also prepared (see Table 1) following the guidelines researched in the theoretical references (Item 3.0). This form evaluates some goal and other subjective questions, where a color system was used that demonstrates the different levels of accessibility and ergonomics through five colors, where "blue" was used to demonstrate full accessibility conditions and "red" for a bad one. accessibility condition.

The on-site surveys were carried out in four small to medium-sized fitness and weight training centers in the city of Recife. The gyms were chosen because they are a reference in the quality of services provided in the located neighborhoods. From this on-site evaluation, it was possible to determine positive and negative aspects of the physical structure of these gyms in relation to the topics studied in item 3.0 of this article.

EVALUATED ITEMS	ACADEMY A					ACADEMY B					ACADEMY C					ACADEMY D				
	Blue	Green	Yellow	Orange	Red	Blue	Green	Yellow	Orange	Red	Blue	Green	Yellow	Orange	Red	Blue	Green	Yellow	Orange	Red
ACCESSIBILITY																				
1.0 Main entrance accessibility level.		x					x					x						x		
2.0 Activity Sector accessibility level				x	x								x							x
3.0 Corridor accessibility level		x					x					x								x
4.0 Accessibility level restrooms				x				x				x								x
5.1 Is there an Upper Floor?	Yes	No				Yes	No				Yes	No				Yes	No			
5.2 If the previous answer is yes, inform the level of accessibility to the upper floor													x							x
ERGONOMICS																				
1.0 Level of ergonomic comfort of the anthropometric dimensions of the users in relation to the activity performed.			x					x					x							x
2.0 Quality in ergonomic comfort in relation to the dimensions of spaces and number of users.		x						x					x							x
3.0 Does it have areas designated for users who are not active (resting)?	Yes	No				Yes	No				Yes	No				Yes	No			
4.0 Does it have appropriate circulation routes for user demand?	Yes	No				Yes	No				Yes	No				Yes	No			
5.0 Level of ergonomic comfort caused by equipment layout.			x					x					x							x
HEALTH AND WORK SAFETY																				
1.0 Do you have fire fighting and protection equipment?	Yes	No				Yes	No				Yes	No				Yes	No			
2.0 Does it have an escape route and emergency signs?	Yes	No				Yes	No				Yes	No				Yes	No			
3.0 Does it have natural lighting and ventilation in all areas?	Yes	No				Yes	No				Yes	No				Yes	No			
4.0 Is the equipment and accessories in good repair and hygiene condition?	Yes	No				Yes	No				Yes	No				Yes	No			
5.0 Is the environment in a good state of conservation and hygiene?	Yes	No				Yes	No				Yes	No				Yes	No			
6.0 Does it have clinics or infirmary?	Yes	No				Yes	No				Yes	No				Yes	No			

Table 1 – Evaluation form

Source: Authors.

PRESENTATIONS OF OBTAINED DATA

Through the application of the evaluation form, it was possible to carry out a comparative analysis of the situation of the physical structure of each of the four gyms studied. Through the survey, aspects of space distribution, ergonomic comfort, dimensioning of space and furniture and/or equipment, accessibility, health and work safety were perceived.

ACCESSIBILITY

With regard to accessibility, it can be concluded that the levels of accessibility of

gyms do not cater to all types of users. On average, even with the main entrance having a good level of accessibility, there is a large architectural barrier between the reception and the activity area, which is the turnstile, which hinders wheelchair users from accessing the environments. The corridors have a good level of accessibility, but three gyms do not have accessible bathrooms. In addition, the three gyms that have an upper floor do not have elevators, it can also be noted that the stairs to the 1st floor are very steep and do not have a handrail.

ERGONOMICS

With regard to ergonomics, the gyms had low levels of qualities in all analyzed items. The levels of ergonomic comfort in relation to the number of users in a space, in relation to the individual area for the development of an activity, and in relation to the space between equipment determined in the layout were all insufficient and could cause serious constraints to users. No gym had a rest area for users. In theory, it can be pointed out some factors that contributed to the low levels of ergonomic comfort, they are: the overcrowding of users, the increase in the number of equipment in a space with insufficient dimensions, the lack of care with the growth of the enterprise when designing the gym and the problems of adapting a building with a previous function different from the current one.

HEALTH AND WORK SAFETY

All gyms showed good conditions of conservation and hygiene of environments, equipment and accessories. However, 100% of the gyms did not have outpatient clinics or infirmary, only one gym had an escape route and emergency signs. Half of the gyms did not have natural lighting and ventilation in all areas, as well as firefighting and fire protection equipment. It is important to remember that all items analyzed in this topic are requirements of the Sanitary Surveillance Division and that failure to comply with these results in the non-approval of the "Health License", necessary for the operation of a gym and bodybuilding gym.

CONCLUSIONS

Through the present work, it was noticed that there is a demand, by the population, for this type of enterprise, and to the detriment of this, new gyms and bodybuilding academies often appear. Since some of the existing gyms do not always follow the minimum standards

required for the quality of use of their physical space.

There is a search for diversification in the activities of the gyms, this requires the ability of designers to know how to deal with so many different spaces within a single development, in addition to knowing how to assess the present need of the architectural program and its dimensioning for the number of users that it is desired to serve.

Despite the constant growth and interest of investors in this area, there is still a lack of specific standards that consider the specificities of a building dedicated to this purpose. Leaving the project without normative guidelines aimed at the comfort and efficiency of the functioning of the space.

In terms of accessibility, the serious errors and/or architectural negligence that still exist in public spaces were pointed out, as well as in the health and work safety item, which makes one reflect on the quality of the inspection, evaluation and approval system for operating licenses of these establishments. It is worth mentioning that all of them had a sanitary license, a firefighter license and an operating license issued by the city hall.

With regard to ergonomics in the evaluated spaces, it can be seen the urgent need for a regulation that can regularize the facilities, layout, minimum sizing for equipment and users. Something that can delimit the minimum of comfort to avoid physical embarrassment. Because without this parameter, the project becomes subjective, being at the mercy of the common sense of each designer and in the future of each entrepreneur.

In architectural terms, we realize the importance of a good project to provide better comfort to users, improve accessibility, diversify the activities carried out, making the enterprise increasingly attractive, competitive in the market and providing satisfaction to users.

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