

ORIGINAL ARTICLE

Accommodation of wheelchair-reliant individuals by community fitness facilities

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Background: Adhering to the recommended healthy physical activity guidelines can be difficult for individuals with spinal cord injury (SCI), stroke or other paralytic conditions. Ordinary community structures such as curbs, stairs and narrow passageways can present as major obstacles for individuals who are reliant on wheelchairs. The Americans with Disabilities Act (ADA) of 1990 mandates that public facilities, including community fitness centers, should be accessible to everyone.

Study design: Analysis of compliance of the ADA and accommodation of wheelchair-reliant individuals.

Objectives: To determine the level of compliance with ADA and the degree of accommodation of wheelchair-reliant individuals.

Setting: Community fitness centers in the Hattiesburg, Mississippi metropolitan area.

Methods: Ten fitness centers consented to unfettered access for evaluation of ADA compliance and accommodation of wheelchair-reliant individuals using an 82-item checklist.

Results: All surveyed facilities were found to be partially compliant, with none of the facilities being 100% compliant. The areas of least compliance were access to and free movement around exercise equipment and full access to restrooms. Beyond ADA accessibility, only 20% of the participating facilities provided suitable adaptive equipment, and no facilities employed staff trained for the special needs of those with paralytic conditions.

Conclusion: Beyond mandated physical accessibility, accommodation of individuals who are reliant on wheelchairs because of SCI or other paralytic conditions was found to be lacking. It remains important for health-care professionals and other advocacy groups to stress the need for inclusion and accommodation of individuals with disabilities to community fitness facilities allowing wellness needs to be met.

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INTRODUCTION

Physical activity is an integral part of a healthy lifestyle. Commonly recognized benefits of physical activity include increased exercise tolerance, weight control, strengthening of muscles and bones, decreased risk of cardiovascular and metabolic diseases, enhanced mental health and decreased all-cause mortality.^{1,2} Although the promotion of physical activity is important for the able-bodied population, it is even more important for individuals with disabilities because of their greater tendency toward sedentary behavior and increased risk of hypokinetic diseases.³ According to the Healthy People 2010 report, only about one-third of individuals with disabilities participate in leisure-time physical activity as compared with over half for the able-bodied population.⁴

The Physical Activity Guidelines for Adults with Disabilities from the US Department of Health and Human Services recommend that adults with disabilities perform moderate-intensity exercise for at least 150 minutes a week or vigorous-intensity aerobic activity for at least 75 minutes per week. In addition, the guidelines recommend moderate- or high-intensity resistance training of all the major muscle groups on 2 or more days a week.³

Adhering to physical activity guidelines can be difficult for individuals with disability as decreased mobility renders them susceptible to a multitude of physical barriers. Stairs or curbs become physical barriers preventing access to those who are non-ambulatory and reliant on wheelchairs. Non-automated doors hinder entrance to buildings for individuals who lack grip strength because of difficulty in turning door knobs or grasping the door handles. Once entrance is gained, individuals who are reliant on wheelchairs require passageways wide enough to accommodate wheelchairs, including the areas to and around the exercise equipment.

Title III of the Americans with Disabilities Act (ADA) of 1990 not only mandates that all individuals regardless of race, color, national origin, sex and religion have equal access to public facilities but also includes the accommodation of people with disabilities and mandates that they should be provided the opportunity to benefit from equal goods or services.^{5,6} Although ADA has helped to decrease the number of barriers to community services, obstacles to accessibility still remain.⁷ Figoni *et al.*⁵ studied fitness centers in the Kansas City metropolitan area and found no facilities to be 100% accessible and compliant with the law.

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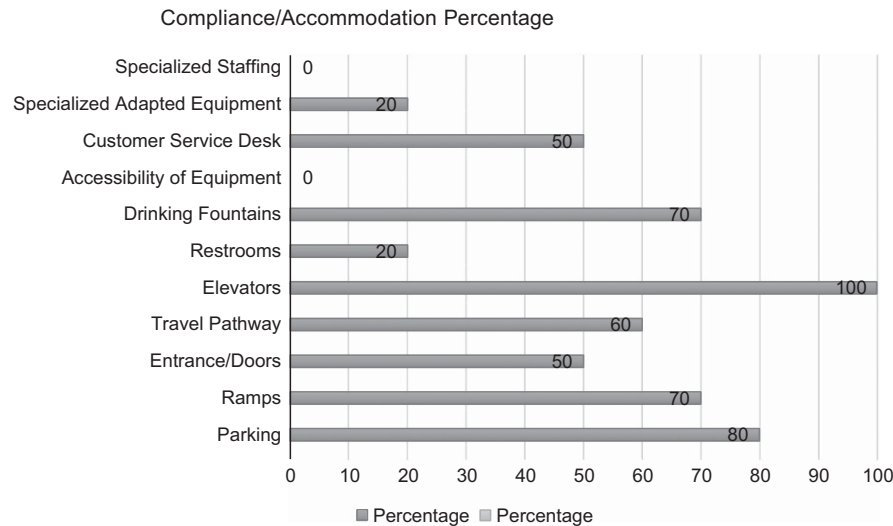


Figure 1 Percentage of facilities that complied with the ADA accessibility requirements and accommodation of individuals who are reliant on wheelchairs.

Because of the immobility resulting from paralysis, individuals with spinal cord injury (SCI), cerebral vascular accident (CVA) and other paralytic conditions require exercise equipment that is adapted to offset disabilities in order to allow full participation in the activity. Although specialized adaptive equipment such as upper-body ergometers, dynamic standers and functional electrical stimulation cycles are found in medical center therapy clinics and rehabilitation centers, access to such equipment is rare in community fitness centers.

The purposes of this study were twofold: first, to assess the level of compliance with the Title III ADA law by fitness centers in the Hattiesburg, MS area, and second, to assess the level of accommodation of wheelchair-reliant individuals beyond the ADA regulations including availability of specialized adaptive exercise equipment and facility staff trained for the special needs of those with paralytic conditions. As of 2010 the population of the state of Mississippi was 2 967 297 with 142 842 in the Hattiesburg metropolitan area—a city within a surrounding 50-mile radius of rural communities and small towns.⁸ The percentage of individuals with a work-limiting disability between the ages of 18 and 64 years in the US was 8.2% in 2013.⁹ Thus, we estimate ~243 318 disabled individuals in the state of Mississippi with 11 713 of those in the Hattiesburg, MS metropolitan area.

MATERIALS AND METHODS

The search for fitness facilities in the Hattiesburg, MS area was conducted using yellowpages.com. Physical therapy centers, as well as facilities specializing in weight loss, dance, martial arts and massage were excluded from the study. Of the remaining 18 public fitness centers, four were found to be out of business and four did not consent to access. Ten facilities provided unfettered consented access.

A compliance/accommodation checklist was adapted from the 74-item ADA compliance checklist used by Figoni *et al.*⁵ Several items were added to the checklist to investigate accommodation of wheelchair-reliant individuals beyond the ADA mandated guidelines. These newly inserted items concerned availability of specialized adaptive equipment such as upper-body ergometers and functional electrical stimulation cycles. In addition, items concerning specialized training of staff for the special needs of those with paralytic conditions were inserted. The full adapted checklist included 82 items (Appendix A).

The manager of each facility was first contacted by telephone in order to request a personal audience for a thorough explanation of the study purpose, procedures and consenting process. The second step was an in-person meeting

at the fitness facility for completion of the informed consent documents. Once the informed consent process was completed, the researcher used an ADA Accessibility Stick (Access, Lawrence, KS, USA) to check the ADA compliance. Measurements were conducted for parking areas, entrance ramps, exterior door entrances, path of travel throughout the public area, elevators, restrooms and locker rooms, drinking fountains and accessibility to and around the exercise equipment. For information concerning accommodation of wheelchair-reliant individuals beyond the ADA accessibility, the facility managers were questioned about the training of facility staff and available adaptive equipment.

The level of ADA accessibility and wheelchair-user accommodation was determined as a percentage of those facilities included in the study.

RESULTS

ADA accessibility

All participating fitness centers in the Hattiesburg, MS area were found to be partially compliant with ADA regulations; however, no facilities were found to be in complete compliance (Figure 1). The items of greatest compliance were parking, ramps, elevators and water fountains. Eighty percent of the facilities provided sufficient parking as mandated by ADA. Only one facility did not provide marked handicapped parking spaces and one other provided designated parking spaces that did not meet the mandated spatial dimensions. Six of the participating facilities had wheelchair ramps with three of those ramps meeting the ADA specifications. Two of the ramps did not meet the safe-incline requirement of 12 inches of length for every inch of rise. Also, one ramp did not have the required 60-inch landing space at the bottom of the ramp. Four of the ten participating facilities provided elevators with 100% of the elevators meeting ADA standards. Seventy percent of the wall-mounted water fountains met ADA compliance. Nine participating facilities provided water fountains, with two not allowing knee clearance for wheelchair users to get close enough for use. One facility did not provide a water fountain but allowed participants to place water bottles in a refrigerator.

Only 50% of the entrance doors met ADA compliance. Half of the facilities required the ability to grasp a door handle and manually open the door for entrance. Fifty percent had automated doors that opened without requiring physical labor. Likewise, only 50% of the customer service desks at the participating facilities had a portion of the desk with a maximum height of 36 inches.

The areas of least compliance were accessibility to exercise equipment and restrooms/locker rooms. Six of 10 facilities provided

adequate passageway to exercise rooms, but all 10 facilities failed to provide adequate space between and around the various exercise machines and stations making it difficult for wheelchair users to access the equipment. Three facilities provided no access to one or more exercise areas as they were accessible only by stairs. One other facility provided only a narrow passageway (less than 36 inches) to an exercise area that is inadequate for the wheelchair users.

Restrooms and locker rooms were also among the most inaccessible areas with only 20% compliance. The non-compliance typically centered on inadequate toilet stall dimensions and mirror placement being too high for individuals sitting in wheelchairs. Four facilities provided restroom stalls with less space compared with the mandated 60 × 59 inches, four facilities had mirrors mounted with the bottom edge higher than 40 inches from the floor and one sink area did not provide leg clearance for those in wheelchairs. In addition, two facilities did not provide wall-mounted grab bars in restrooms.

Beyond ADA accessibility

Although public facilities are mandated to provide access to facilities equal to the general public, providing specialized exercise equipment and staffing particular to the needs of the individuals who are reliant on a wheelchair are not specifically mandated. Nevertheless, two facilities did provide limited adaptive equipment for wheelchair-reliant individuals in the form of an SCIFIT exercise machine (a combination upper- and lower-body ergometer with a removable seat that allows access for individuals in wheelchairs) and an upper-body ergometer. None of the ten facilities provided specialized equipment that can initiate exercise to paralyzed muscles such as functional electrical stimulation cycles or similar devices. No facilities provided staffing with specialized training concerning paralytic conditions. Thirty percent of the facilities employed individuals with college degrees in exercise science with certifications concerning the safe training of able-bodied individuals, but none had adapted for therapeutic exercise qualifications.

DISCUSSION

After receiving formal skilled rehabilitation services, individuals who are essentially able bodied are able to sustain their rehabilitation progress and pursue wellness activities with a self-administered exercise program at home or at community fitness centers. This practice is important for the overall continuum of care allowing optimization of rehabilitation, maintenance of restored function and promotion of total body wellness.

The results of this study indicate that, regardless of the ADA mandate, access to community fitness centers is substantially limited for individuals who are reliant on wheelchairs. These results concur with a 1993 study by McClain *et al.*⁶ concerning wheelchair access to restaurants in several mid-western cities. McClain *et al.*⁶ found that only 53% of the participating restaurants provided handicapped parking and only 66% provided the ADA acceptable ramps when needed. In addition, accommodations needed for wheelchair users to be able to participate fully in the ongoing physical activities via the use of specialized adaptive equipment are inadequate. Similar to the study by Figoni *et al.*⁵ in 1998, no physical-fitness facilities were found to be 100% ADA compliant with the lowest compliance concerning free passage to and around the exercise equipment and lack of full accessibility to restrooms.

Many of the impediments to passage in and around the exercise equipment result from exercise machines being placed too closely together. At least 36 inches width to, between and around all exercise equipment is needed to allow adequate access by wheelchair users.

Access could be improved by simply rearranging exercise equipment allowing adequate room for wheelchair users to maneuver around exercise stations and machines. Other issues involving lack of access to exercise areas because of inaccessible platforms or stairways and inadequate space in restroom stalls provide more permanent structural challenges.

Adaptive equipment such as upper-body ergometers and functional electrical stimulation cycles is available at rehabilitation clinics but they are rare at community fitness centers. Many individuals who are reliant on wheelchair frequently also lack trunk stability; thus, providing exercise equipment that can be accessed from their own wheelchairs eliminates the risk of injury that may occur during transfers. Fitness centers may be hesitant to purchase adaptive equipment fearing lack of use as exercise adherence among those with disabilities has been reported as typically low.⁴ However, Dolbow *et al.*¹⁰ found that when individuals with SCI were provided access to exercise equipment such as functional electrical stimulation cycles, the participation rate was twice the exercise rate of the general population.

One other important factor concerning the accommodation of individuals who are reliant on wheelchairs is the presence of staff who are trained for the special needs of those with SCI, CVA or other paralytic conditions. None of the facilities that participated in this study provided staffing that met the safety needs of these special populations. Staffing trained for the special needs of those with paralytic conditions is vital as those with SCI and CVA often have altered hemodynamic responses to exercise.^{11,12} After SCI, impairment of the autonomic nervous control system may result in abnormal cardiovascular responses to exercise or other stressful events inducing dangerous conditions such as orthostatic or exercise hypotension or autonomic dysreflexia.¹²⁻¹⁵

CONCLUSION

One and a half decades after the first study on accessibility of public fitness facilities in the Kansas City metropolitan area by Figoni *et al.*⁵ this current study in the Hattiesburg, MS area found that ADA compliance remains lacking. Although all 10 of the consenting fitness facilities partially met the ADA guidelines, no facilities were 100% compliant. The areas of least compliance were access to and around the exercise equipment and full access to restrooms. Beyond mandated physical accessibility, accommodation of individuals who are reliant on wheelchairs because of SCI, CVA or similar paralytic conditions was also found to be lacking. Only 20% of facilities provided adaptive exercise equipment, and no facilities provided staffing trained for the special needs of this population. It remains important for health-care professionals and other advocacy groups to stress the need for inclusion and accommodation of individuals with disabilities to community fitness facilities allowing wellness needs to be met. Although this study cannot be generalized to fitness facilities nationwide, it does provide an example of non-compliance with ADA mandates and should be used as an encouragement by facilities to investigate their particular accessibility and accommodation levels. There is a need for further study in a variety of geographical regions in the US to be able to estimate ADA accessibility and accommodation of wheelchair-reliant individuals nationally. Likewise, study outside of the US is advocated to project accommodation of individuals who are reliant on wheelchairs internationally.

DATA ARCHIVING

There were no data to deposit.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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APPENDIX A**Accessibility of Physical Fitness Facilities and Staff: Checklist****A. PARKING:**

1. Is accessible parking provided? If no, skip to B.
2. Does facility have appropriate number of accessible parking spaces?
3. Are accessible parking spaces the closest spaces to the building's accessible entrances?
4. Are accessible spaces clearly identifiable (marked with accessibility symbol? (Through signs in front of spaces and/or painted directly on the spaces).
5. Are spaces at least 96'' wide?
6. Are adjacent access aisles at least 60'' wide (minimum of 1 aisle for every 2 accessible spaces)?

B. RAMPS:

7. Is the building accessible without ramps? If yes, skip to C.
8. Do ramps have an incline no steeper than 1'' for every 12'' with maximum rise of 30'' per run?
9. Do ramps have landing areas at least 60'' × 60'' at the top and the bottom of the landing?
10. Is the ramp width a minimum of 36'' excluding the flared sides?
11. Do ramps longer than 72'' have handrails on both sides?

C. EXTERIOR ENTRANCES/DOORS

12. Is opening a door required to enter the building? If no, skip to D. 20.
13. Do doors have a minimum clear opening space of 32'' and maximum of 24'' depth between sets of doors?
14. Can the door be opened without hardware that requires grasping or twisting?
15. Is there a series of doors required to enter the building? If no, skip to D. 20.
16. Do doors in a series swing either in the same direction or away from the space between the doors?
17. Is the threshold of the door less than 3/4'' for exterior sliding doors or 1/2'' for other type of doors?
18. Does a minimum of 1 door at each accessible entrance meet the above criteria?
19. Are 50% of all entrances accessible, with at least 1 entrance on the ground floor?

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D. PATH OF TRAVEL

20. Is there an accessible route at least 36'' wide from the facility entrance to all areas within the building (excluding areas not normally frequented by non-employees)? If yes, skip to D. 25.
21. Is route free of permanent obstruction(s)?
22. Is route free of temporary obstruction(s)?
23. Do routes which are less than 60'' wide have passing spaces 60'' × 60'' at reasonable intervals (not to exceed every 200 ft)?
24. Are floors surface slip resistant, stable, and firm? (Most tile floors are acceptable except high gloss or wax.)
25. Does the floor surface have carpet covering? If no, skip to E.31.
26. Does carpet floor covering have pile thickness of 1/2'' or less and are exposed edges of carpet fastened to the floor with trim along entire edge?
27. Are there any surface changes within the business? If no, skip to E.31.
28. Are surface changes of 1/4'' -1/2'' beveled, with a ratio of slope to greater than 1:2?
29. Are gratings present in walking surfaces? If no, skip to E.
30. Do gratings have spaces 1/2'' or less in 1 direction?

E. ELEVATORS

31. Is an elevator required to access all levels of the facility? If no, skip to F.
32. Are public elevators located in the public area that will access all levels?
33. Are the hall call buttons centered at 42'' above the floor or lower?
34. Does the area below the hall call buttons allow the wheelchair to approach? (Mark "no" if objects project into the lobby 4'' or more.)
35. Do elevator doors remain open a minimum of 5 seconds?
36. Are elevator doors a minimum of 36'' wide when fully open?
37. Does the interior dimension measure a minimum of 51'' × 68'' for off-centered doors or 51'' × 80'' for centered doors (with doors closed)?
38. Is the highest button at/below 54'' for side approach or at/below 48'' for front approach?
39. Are all emergency buttons grouped at bottom of the panel 35'' or less from floor?

F. RESTROOMS/LOCKER ROOMS

40. Are public restrooms provided? If no, skip to G.
41. Are restroom doors at least 32'' wide?
42. Is there an unobstructed turning space of 60'' \times 60'' in the restroom (no door swings in this space).
43. Are toilet stalls used in the restroom? If no, skip to F.49.
44. Is the toilet stall door at least 36'' wide and does it swing outward?
45. Are the dimensions inside the toilet stall at least 60'' wide and 59'' deep floor mounted water closet?
46. Is there toe clearance at front and one side of the water closet of at least 9'' from the floor in stalls with a depth of less than 60''?
47. Are grab bars installed? If no, skip to F.51.
48. Are they mounted 33'' to 36'' from the floor?
49. Is the toilet height 17'' to 19'' from the floor to the top of the seat?
50. Is the toilet paper dispenser at least 19'' from the floor and does it have a continuous paper flow.
51. Is there a clear floor space of at least 30'' \times 48'' for front approach to sinks, dispensers, and mirrors?
52. Is the sink mounted with counter or rim no higher than 34'' above the floor and does it have a knee clearance of at least 27'' high, 30'' wide and 19'' deep?
53. Is the sink depth 6.5'' or less?
54. Are hot water pipes and/or abrasive surfaces beneath the sink insulated to protect against contact?
55. Are mirrors mounted with the bottom edge 40'' from the floor or lower?
56. Are towels and dryers within reach (15''-48'' for front approach, or 9''-54'' for side reach)?
57. If lockers are available, is the lowest locker at a height of 36'' or lower?

G. TELEPHONES

58. Are public telephones provided? If no, skip to H.
59. Is there a floor space of at least 30'' \times 48'' to allow for forward or side approach?
60. Is the highest operable part mounted at 54'' for side approach or 48'' for front approach (or lower)?
61. Is the cord from the ear piece to the base at least 29'' long?
62. Does at least one telephone meet the requirements listed above?

H. DRINKING FOUNTAINS

63. Are public drinking fountains provided? If no, skip to I.
64. Do wall mounted units have clear knee space from the floor to the bottom of the fountain of at least 27'' high, 30'' wide, 17'' deep and floor space of 30'' \times 48'' for front approach?

65. Do free standing units have clear floor spaces of 30'' \times 40'' for side approach?
66. Is the front- or side-mounted controls of the fountain near the front edge?
67. Is the spout located in the front of the fountain and does it have a trajectory parallel or nearly parallel to the front of the unit?
68. Are the front- or side-mounted controls of the fountain near the front edge?
69. Are at least 50% of the existing fountains accessible and on an accessible route?

I. ACCESSIBILITY TO AND AROUND EXERCISE EQUIPMENT

70. Is there an accessible route of at least 36'' width to, between, and around all exercise equipment within the facility? If yes, skip to I.74.
71. Is route free of permanent obstruction(s)?
72. Is route free of temporary obstruction(s)?
73. Is the route on floors surfaces which are slip resistant, stable, and firm?

J. CUSTOMER SERVICE DESK

74. Does the desk or counter have a portion with a maximum of 36'' in height?

K. BEYOND ADA REQUIREMENTS

75. Is there exercise equipment available accessible from wheelchair without transferring such as upper-body ergometer?
76. Are there straps and/or cuffs available to secure hands to equipment for those with decreased ability to grip?
77. Are there straps or cuffs available to secure feet to pedals?
78. Are there electrical stimulation devices, i.e., functional electrical stimulation cycles to allow exercise with paralyzed muscles?
79. Are there lifts or ramps to enter or exit swimming/exercise pools?
80. Is there a quiet room with calming features, i.e., decreased noise, dimmer lights, and less human traffic to allow individuals with anxiety to relax?

L. STAFF TRAINING

81. Is there a staff member on premises who has been trained in the special needs/precautions of those with neurological problems such as spinal cord injury, multiple sclerosis and other paralytic disorders?
82. Is there a staff member with a professional certification specific to exercise training for those with disabilities such as spinal cord injury, multiple sclerosis, stroke and other paralytic disorders?