

**Recommendations for  
Improving Accessibility at the  
American Club's Fitness Center  
in Taipei, Taiwan**

for  
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Fitness and Recreation Director  
American Club, Taipei, Taiwan  
and  
Liran Golan  
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December 14, 2020

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December 14, 2020

Christopher Spencer  
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Dear Mr. Spencer and Mr. Golan,

I have written a report, Recommendations for Improving Accessibility at the American Club's Fitness Center, that analyzes the barriers for members with disabilities and the costs for implementing structural and non-structural interventions. The report highlights health and ethical implications of exclusive space designs, which would be useful in considering ACC's fitness center's accessibility. Thank you for interest in reading the report and considering these recommendations.

Through a literature search, observational study, interviews with members with disabilities, and surveys, ACC's fitness center appears to unintentionally exclude individuals with disabilities. The fitness center includes structural (physical) barriers that impede those with disabilities from entering and using the space. The center also includes non-structural (social) barriers, such as the lack of inclusive fitness classes and other members' negative attitudes towards those with disabilities.

After considering both the costs and benefits, the report proposes structural and non-structural interventions that can be immediately executed. More specifically, these interventions include removing doors and old fitness equipment, opening access to elevators, making bathrooms more accessible, and adapting fitness classes, which all fall within ACC's annual fitness maintenance budget. Implementing these would allow individuals with disabilities to feel more included and motivated to improve their health and reach out to other members, leading to better quality of life for members with disabilities and an inclusive club culture for ACC.

I have enjoyed researching and writing the report and would be happy to answer any follow-up questions. Please email me at [yuanashl@student.ubc.ca](mailto:yuanashl@student.ubc.ca) or call me at 123-123-1234 anytime.

Sincerely,  
Ashley Yuan

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**ABSTRACT**

The design of gym spaces often includes structural and non-structural (i.e. social) barriers for individuals with disabilities. The exclusive design of spaces can lead to secondary physical and mental health concerns for these individuals, resulting in poorer quality of life. Furthermore, non-structural barriers have ethical implications for individuals with disabilities, which can also result in mental and physical health complications. The American Club's (ACC) fitness facility falls in the category of exclusive design of spaces, which can negatively affect members with disabilities. Utilizing universal design principles, an observational study, interviews, and surveys, this report notes common structural and non-structural barriers for members with disabilities and analyzes the feasibility of these barriers using cost-benefit analysis.

With considerations to ACC's annual fitness maintenance budget, the report recommends the following interventions that can be immediately implemented:

- Opening access to the elevators on the first floor by removing the gates
- Removing push-pull doors to the gym and on the path to the bathroom
- Removing old equipment from the gym for wider paths
- Adding universally designed equipment
- Attaching grab bars to the bathrooms near the gym
- Adapting fitness classes for individuals with disabilities
- Funding fitness instructors' certification for adaptive fitness training

An additional (more costly) recommendation to consider is hiring fitness instructors with disabilities to ensure a truly inclusive gym environment for individuals with disabilities.

## INTRODUCTION

The new addition of the fitness facility in the American club (ACC) has been largely welcomed by members of the club. However, its inaccessibility to members with mobility disabilities may lead to lasting issues for this population in the maintenance of their physical and mental health and their inclusion into the club culture.

The lack of accommodations for people with disabilities may lead to long-term health issues. Research shows that Taiwanese adults with disabilities scored the lowest on participation in physical and social activities, ten times less than the scores for those without disabilities (Yen et al. 603). Individuals with mobility impairments also tend to spend 9.5 hours a day sedentary. This behavior is largely correlated with poor facilities for exercise, leading to chronic health issues (Okuyama and Oka 69; Rimmer et al. 214).

Excluding those with disabilities also leads to ethical issues for these individuals. The exclusive design of spaces (i.e. no wheelchair ramps) communicates microaggressions (intentional or unintentional verbal, behavioral, or environmental communications of prejudice) towards individuals with disabilities (Freeman and Stewart 411). This causes social exclusion and unequal treatment of these individuals, further compromising their mental and physical well-being.

Based on previous research, an observational study of the fitness space, interviews with individuals with disabilities and surveys with ACC members and fitness trainers, this report assesses 1) the specific causes of inaccessibility of ACC's fitness center and 2) the feasibility of improving the accessibility of the ACC fitness center by removing structural (i.e. physical) and non-structural (i.e. social) barriers.

This research includes six major areas of focus: 1) the barriers to participation of individuals with disabilities in the gym, 2) the specific needs of members with disabilities, 3) the actions ACC can take to remove physical and social barriers, 4) the effect of these changes on current users' experiences of the gym, 5) the form of education the fitness staff requires to help individuals with disabilities, and 6) the costs of making the fitness center more accessible.

This report concludes by making recommendations for improving the accessibility of the fitness center physically and socially. These recommendations also consider the potential costs of the modifications and ACC's budget for maintenance.

## **DATA SECTION: NEEDS ASSESSMENT OF INDIVIDUALS WITH DISABILITIES**

### **Accessibility Needs and Space Design**

Individuals with mobility disabilities' share the same universal needs as everyone else. However, their needs of autonomy, empathy, and community (participating and contributing to society) are often unmet due to environmental barriers (Max-Neef 197). Their unmet needs contribute to poor mental health and higher risks of secondary health conditions (Rimmer et al. 214). Consequently, these needs should be emphasized when designing spaces and services to avoid unintentional communications of microaggression and to actively welcome these individuals into the space.

The universal design principles are often used as guidelines in space design or redesign. More specifically, designing to include individuals with mobility impairments considers the principles of equitable use, flexibility in use, and size and space for approach and use (Mace "The"). Equitable use is the ability for all users, dependent of ability, to use the space or service in the same way. Flexibility in use describes having choices and accommodations for use by a

wide variety of individuals. 'Size and space for approach and use' states that there should be enough space, and objects are easily reachable for users of all abilities and postures (Mace "The"). These three principles allow individuals with disabilities to have the ability to move around freely in spaces, have choices and accommodations, and experience these spaces with others, meeting their needs of autonomy, empathy, and community, respectively (Max-Neef 197).

Research has also shown that individuals with disabilities have specific needs that depend on their specific impairments (Rimmer et al. 214). For instance, the different safety and supervision requirements of individuals with mobility impairments requires user-centered space design, which involves interviewing all potential users of the space (Petersen and Piletic 38).

### **ACC's Viewpoint on Accessibility of the Fitness Space**

Since user-centered design involves gathering opinions from the local community, an objective analysis of the fitness space, surveys with members without disabilities and fitness trainers, and interviews with those with disabilities were conducted.

**Observational Study of ACC's Fitness Facility.** The second-floor location of the fitness space poses an inconvenience for members with disabilities. As shown in *Figure 1*, the staircase is steep with no means of access for those with disabilities. The elevator leading to the gym is also closed to members. This communicates exclusive rights for individuals without disabilities to access the gym, which could unintentionally communicate microaggressions. Further, the narrow push-pull door to enter the gym is inconvenient for individuals with wheelchairs as they either cannot easily enter the space due to the need to push or pull, or they cannot enter the



space at all due to the narrow doors. Within the gym, the space between equipment is very narrow, leaving no path for wheelchair access to certain areas (*Figure 2*). This could prevent those with disabilities from performing exercises along with others. Most machines are also unadaptable, which could limit the exercise options for individuals with disabilities.



**Figure 1.** Stairway leading up to the gym



**Figure 2.** No spacing between equipment

**Specific Needs of Members with Disabilities.** A few members with mobility impairments agreed to speak about their difficulties accessing and using the fitness space. A 40-year-old diplegic (with paralysis in both legs) member, with a pseudonym Ann, stated her difficulty entering the gym and maneuvering it:

I don't go because it is too difficult for my wheelchair to go there. The only way is stairs... you have to go through the back staff area [to reach the elevators]... Other equipment I cannot use because I need help getting out of my wheelchair and back on again.

Another individual, with the pseudonym Mary, who is a senior and lost muscle mass in her legs to walk, expressed her difficulty accessing washrooms:

The bathroom is a huge problem for me everywhere I go because I'm old. I need time to get in and out of the wheelchair.

Ann also mentioned non-structural barriers concerning fitness trainers and group classes:

I never [go to group classes]. They use full body and there are too many people and no space for my wheelchair. The movements are too intense for me and it's not safe when there is no one paying full attention to me. I need to go to a trained physical therapist to do exercises because I have other health issues too.

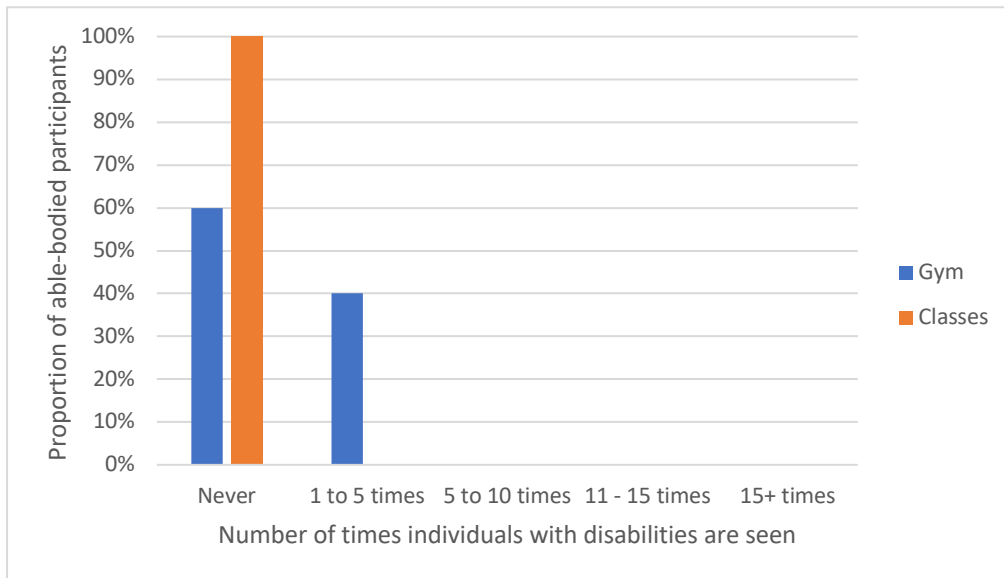
Mary indicated her experiences with exclusion either due to inaccessibility or ageism:

I think people usually don't talk to me much because I'm their senior. It's also hard to talk when there are so many people and it's busy because I have my wheelchair too and people move too quickly.

These two individuals demonstrated that both structural and non-structural barriers are present within ACC's fitness space. The lack of access to the gym and certain equipment, and the inconvenience of bathrooms are key structural barriers within the gym space. The inexperience of trainers with individuals with disabilities and (unintentional) exclusive behavior of other members are notable non-structural barriers that must be addressed.

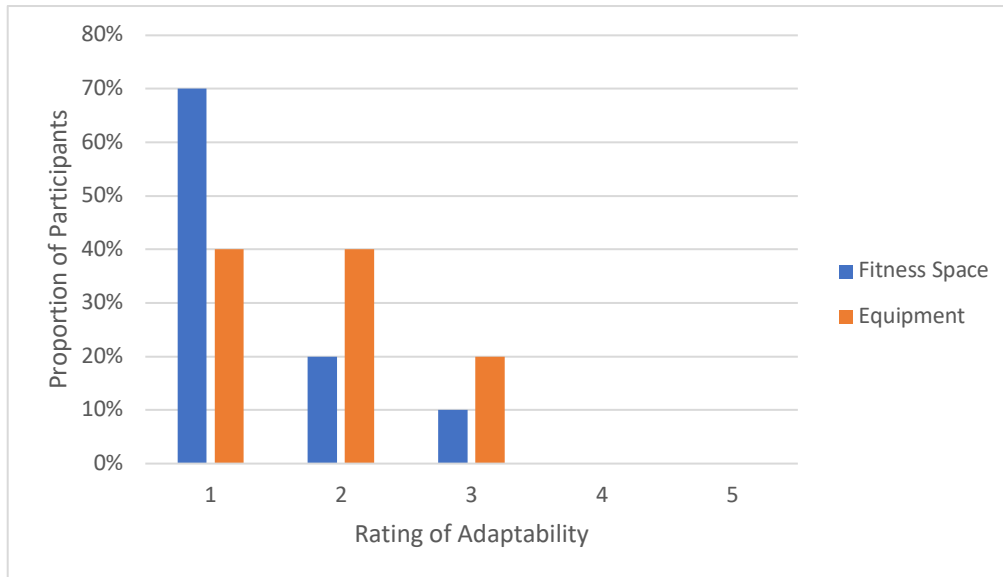
**Survey of Members without Disabilities and Fitness Trainers.** To capture the views of all stakeholders, members without disabilities who frequent the gym and fitness trainers were surveyed about the inclusivity and physical barriers in the gym. Both instructors and members believed that there is a lack of individuals with disabilities in the gym. *Figure 3* demonstrates

that none of the participants have seen individuals with disabilities in the gym more than 5 times, indicating a lack of participation of individuals with disabilities in the fitness center.



**Figure 3.** Responses to the frequency of seeing members with disabilities in the gym or group classes

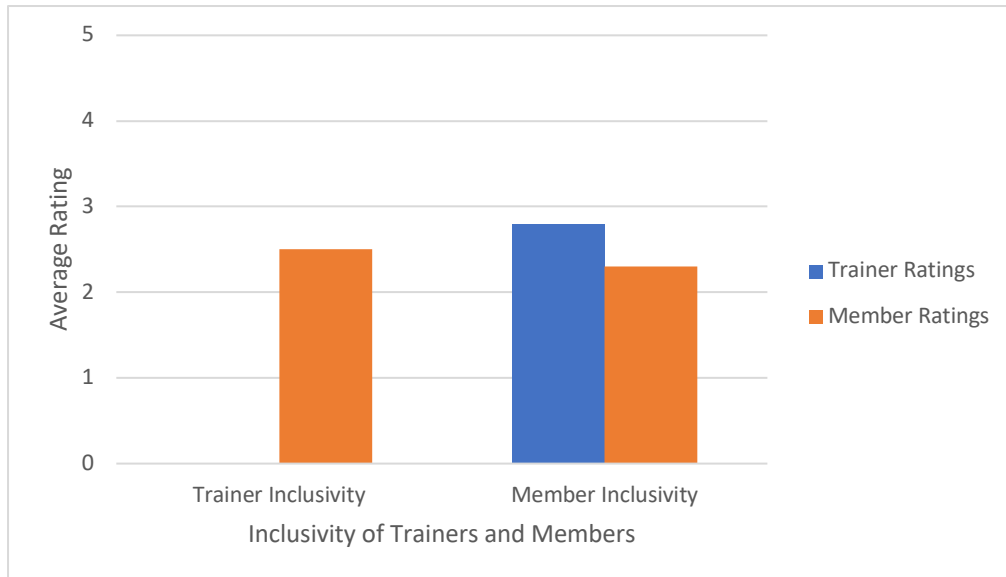
**Physical Barriers.** In terms of physical barriers, the highest ratings for adaptability of the fitness space and equipment is 3 out of 5, with the highest proportion of participants rating the space 1 out of 5, where 5 means 'very adaptable' (see *Figure 4*).



**Figure 4.** Participant ratings of the adaptability of the fitness space and equipment to individuals with disabilities

Participants also provided reasoning behind their ratings. Most of them explained that “there is no way for them to get up to the gym” and that “all the machines are for running or biking, there are no machines for them to use”.

**Social Barriers.** The ratings for trainer and member inclusivity were also low among participants, suggesting unawareness of accessibility issues that members with disabilities experience in the gym. *Figure 5* demonstrates that, on average, ratings of inclusivity were around 2.5 out of 5, indicating that members and trainers were considered not very inclusive to this population. Instead of trainer inclusivity, trainers were asked to rate the adaptability of their fitness classes, which averaged a rating of 1.8, lower than all trainer and member inclusivity ratings (not shown in *Figure 5*).



**Figure 5.** Average trainer and member ratings of trainer and member inclusivity towards individuals with disabilities in the gym

Some reasons other members rated less than 5 are: “some people will judge when someone comes in to work out in a wheelchair” and “[the classes trainers hold] are too hard for them”.

Fitness trainers indicated that functionality is important to be in spinning, boxing, and weightlifting classes and that they “do not have the proper experience to help [people with disabilities] in large fitness classes”.

### Key Findings

Based on observations, members’ with and without disabilities and fitness trainers’ opinions, ACC’s fitness facility presents a few notable structural and non-structural barriers.

**Structural Barriers.** ACC’s fitness facilities main structural barriers are:

- Inaccessible elevators to the gym
- Narrow and non-accessible doors to the gym
- Inadequate spacing of equipment

- Equipment that are not adaptable for individuals with mobility impairments
- Inconvenient bathrooms

**Non-structural Barriers.** Key non-structural barriers present in the gym are:

- Lack of education of fitness trainers on training individuals with disabilities
- Inaccessible group fitness classes
- Exclusive attitudes of members with disabilities

### **Possible Interventions**

From the abovementioned barriers, this section proposes possible interventions utilizing the universal design principles.

**Structural Interventions.** Making the elevators accessible to members on the first floor would make it a lot more convenient for those with disabilities to access the gym. Opening the small staff area where the elevator is located can communicate that these individuals are welcomed in the gym. Further, the narrow doorway could be widened and made an automatic sliding door like the other doors in the club. This allows for equitable use for individuals with disabilities.

Moreover, some equipment that are old or that are often unused can be removed, creating wider pathways for people with wheelchairs. Additionally, introducing equipment that have swing-away seats or arm-bikes would allow for flexibility and provide this population with a choice of exercises.

Finally, removing the swing-open door on the way from the gym to the bathroom and attaching a bar to the wall will allow individuals with disabilities to easily access and use the washroom during a workout session.

**Non-structural Interventions.** Actively including members with disabilities in fitness classes through adapting classes or putting out ads could increase their participation in the classes. These classes could be adapted to be smaller and include different levels of the same exercises, so more focus can be paid to each member.

Further, requiring trainers to obtain a certificate for helping individuals with disabilities exercise or hiring a trainer with a disability can promote this fitness space as more inclusive. This can inspire a different attitude and understanding of disability in both trainers and other members (Richardson, Smith and Paphomas 84). It will also create a space that meets the needs of empathy and community of individuals with disabilities.

## COST-BENEFIT ANALYSIS OF PROPOSED INTERVENTIONS

### Costs of Structural Interventions

The costs of structural interventions were collected based on the floor plan of ACC and a consultation with Taiwanese contractors, Feng Yi Design. The average costs of structural interventions based on Taiwanese contractors are detailed in *Table 1* below.

Structural Intervention	Reasons for Cost	Approximate Cost
Opening the elevator space to members	Removal of gates that separate the elevator from the area open to members	0 – 1000 NTD (for service)
Making the gym entrance and passage to bathrooms accessible	Adding a sliding door that is wider than the current door	28,000 – 57,000 NTD

	Alternative: Removal of push-pull doors for entrance and door to get to the bathrooms	2800 – 5000 NTD
Removal of equipment	Service to relocate old equipment	2000 – 5000 NTD
Addition of universally designed equipment	Exercise machines with removable seats (i.e. arm ergometers)	100,000 – 200,000 NTD (“PRO2 Total Body”)
Attachment of grab bar in bathrooms	Cost of bar and attachment	500 – 700 NTD
<b>Total</b>		<b>135,300 - 268,700 NTD</b>

**Table 1.** Costs and Reasons for Costs of Structural Interventions

All the structural interventions are feasible and well within the 10,000,000 NTD budget for maintenance and renovation of the fitness facilities at ACC (Yin 2). These changes will invite more members to utilize the gym and foster an inclusive club community. Although adding a sliding door and purchasing accessible exercise machines are more costly, their universal design benefits those with disabilities without compromising convenience for those without. These one-time costs will provide long-term benefits to members with disabilities and the overall ACC community.

**Costs of Non-structural Interventions**

Table 2 details the reasons and approximate costs of non-structural recommendations. These costs are based on current prices of fitness classes and salary of fitness instructors at ACC.

Non-structural Intervention	Reasons for Cost	Approximate Cost
Adaptation of Fitness Classes	Fewer individuals per class and time for adapting fitness programs	5000 NTD for every 5 fewer people in class
Certification of Fitness Instructors	Online course and certification for Adaptive Personal Training and Group Fitness with the American	40,000 NTD (8000 NTD per instructor)



	College of Sports Medicine (ACSM)	
Hiring a fitness instructor with disabilities	Salary of fitness instructor	883,814 NTD per year (“Personal Trainer Salary”)
Total Fixed One-time Cost		40,000 NTD

**Table 2.** *Costs and Reasons for Costs of Non-structural Interventions*

These non-structural interventions encourage more diverse individuals to join the fitness center and use its services. Although adapting the class for fewer individuals and making changes in the program lead to less profit per class (~25,000 NTD per day with 5 classes), more (diverse) individuals will be willing to attend these classes, easily compensating for this loss. Additionally, having certified instructors with more knowledge ensures safety and proper adaptation of exercise activities for those with disabilities. This one-time cost is low compared to gambling the well-being of individuals with disabilities during fitness sessions with instructors. Further, having staff with more diverse abilities would promote the club’s fitness center as an inclusive environment, encouraging more individuals to join the club and use these services. However, this intervention may run over the club’s budget for fitness staff due to the higher costs of fitness instructors with disabilities compared to those without.

Overall, one-time fixed costs only weigh out to be 308,700 NTD, well under ACC’s 10,000,000 NTD fitness maintenance budget (Yin 2).

## CONCLUSION

### Summary and Interpretation of Findings

Individuals with disabilities require extra attention to meet their needs of autonomy, empathy and community. Many fitness facilities often unintentionally neglect these needs and communicate microaggressions, leading these individuals to feel further excluded. This results in long-term health conditions and poor quality of life for this population (Rimmer et al. 214). To mitigate this, the use of universal space design, namely the principles of equitable use, flexibility in use, and size and space for approach and use, are used in the design and redesign of facilities.

Among ACC members with and without disabilities and fitness trainers, there is an overall consensus that notable physical and social barriers are present throughout the gym. Members with disabilities also mentioned specific needs of extra supervision, educated trainers, and convenient bathrooms.

Key structural barriers include:

- Inaccessible entrance to the gym (lack of elevator access, inaccessible doorway)
- Inappropriate equipment and narrow spacing of equipment
- Inconvenient bathrooms

The major non-structural barriers cited are:

- Lack of education of fitness trainers on training individuals with disabilities
- Inaccessible group fitness classes
- Exclusive attitudes of members with disabilities

These barriers prevent individuals with disabilities from achieving physical and individual independence, gaining respect and understanding from others, and being included in the ACC community.

### **Final Recommendations**

Considering the limitations and costs of possible interventions, the ACC community can take small steps towards achieving an inclusive club culture:

- Opening access to the elevators on the first floor by removing the gates
- Removing push-pull doors to the gym and on the path to the bathroom
- Removing old equipment from the gym for wider paths
- Adding universally designed equipment
- Attaching grab bars to the bathrooms near the gym
- Adapting fitness classes for individuals with disabilities
- Funding fitness instructors' certification for adaptive fitness training

These inexpensive interventions can spark huge changes for the club in the future. With higher budgets, ACC can consider hiring fitness instructors with disabilities to make the space truly all-inclusive. With the remaining 9,691,300 NTD budget, hiring a disabled instructor for a year as a 'trial-run' could provide some insight into how members with and without disabilities would respond to having a fitness instructor with disabilities. This could allow the club to consider hiring the instructor in the long-term if members respond well and if members with disabilities participate more in the fitness center.

Communicating inclusion through these small steps can change members' attitudes towards individuals with disabilities and promote a more diverse member population. This allows those with disabilities to independently improve their physical and mental well-being, leading to a better quality of life. With increasing acceptance and awareness among ACC members and staff, more impactful changes can be implemented to ensure an inclusive club culture.

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## APPENDIX A: Interview Questions

These are preliminary questions for semi-structured interviews with individuals with disabilities. The interview would take on a phenomenological approach—it is meant to be steered by participants and more conversational in nature. These questions are written as a guide. Prior to the interview, participants would be briefed regarding the aim of the research and provided with the details for the intended audience of the research. Their consent will be requested, and their confidentiality assured.

1. How important do you think exercise is for your physical and mental well-being?  
Describe your experiences exercising at ACC or outside of ACC.
  - a. Have you encountered any barriers in fitness spaces?
2. How often do you go to the gym at ACC?
  - a. If they frequent the gym: How would you describe your experience at the gym?
  - b. If they don't: Are there barriers you have encountered that prevents you from going to the gym?
3. Are there any changes you would make to the fitness space to make it easier for you to work out at the gym?
  - a. What is your ideal location for the gym?
  - b. Are there changes you would make to the design of the gym or equipment?
  - c. What kind of equipment would you like to see at a gym that is not already there?
4. Do you participate in group fitness classes or individual fitness classes? Why or why not?
5. Are there any changes you would make to the fitness classes that would make you join more often?
6. Describe your experience with other members at ACC.
  - a. Are there any experiences where they are particularly welcoming or particularly exclusive?
7. Describe your experiences with fitness trainers at ACC.
  - a. Based on your experiences, how well-informed are they about your fitness and health needs?
  - b. Are there any changes you would want fitness trainers to make in their style of training?

## APPENDIX B: Survey Questions

### Member Survey

I am an undergraduate student at UBC doing a research project for a technical writing course. The aim of this survey is to gather primary data to investigate and improve upon the accessibility at the American club fitness center. The final report will be addressed to the club's fitness and recreation director, Christopher Spencer, the governor of the sports committee, Liran Golan, the club's members and fitness instructors. This survey is pivotal in my research for reaching well-informed and practical recommendations for the fitness facilities. This survey contains 7 questions that will take no longer than 5 minutes. All responses are voluntary and confidential. Thank you for participating in my survey.

1. I have seen members with disability in the gym: *(Circle one)*  
**1) Never    2) 1 – 5 times    3) 5 – 10 times    4) 11 – 15 times    5) 15+ times**
  
2. How well does the **fitness space** adapt to members with disabilities? *(Rate from 1-5)*  
**1) Not well    2)    3)    4)    5) Very well**
  
3. If you rated less than 5 in the previous question, what **physical barriers** do you think the fitness space may have for ACC members with disability?
  
  
  
  
  
  
  
  
  
  
4. How inclusive are **fitness trainers** to individuals with disabilities in their group classes? *(Rate from 1-5)*  
**1) Not inclusive    2)    3)    4)    5) Very inclusive**
  
5. How inclusive are ACC **members** to individuals with disabilities? *(Rate from 1-5)*  
**1) Not inclusive    2)    3)    4)    5) Very inclusive**
  
6. If you rated less than 5 in the previous question, what **social barriers** do you think the fitness space may have for ACC members with disability?
  
  
  
  
  
  
  
  
  
  
7. How important is exercise for individuals with disabilities? *(Rate from 1-5)*  
**1) Not important    2)    3)    4)    5) Very important**



### Fitness Trainer Survey

I am an undergraduate student at UBC doing a research project for a technical writing course. The aim of this survey is to gather primary data to investigate and improve upon the accessibility at the American club fitness center. The final report will be addressed to the club's fitness and recreation director, Christopher Spencer, the governor of the sports committee, Liran Golan, the club's members and fitness instructors. This survey is pivotal in my research for reaching well-informed and practical recommendations for the fitness facilities. This survey contains 7 questions that will take no longer than 5 minutes. All responses are voluntary and confidential. Thank you for participating in my survey.

1. About how many individuals with disabilities regularly attend your group classes?

1) None    2) 1 – 5    3) 5 – 10    4) 11 – 15    5) 15+

2. How inclusive do you think other members are towards individuals with disabilities at the gym?

1) Not inclusive    2)    3)    4)    5) Very inclusive

3. I have group classes specifically for members with disabilities. (*Circle One*)

Yes            No

4. How easily can the exercises in your group classes be performed by people with disabilities? (*Rate from 1-5*)

1) Too difficult    2)    3)    4)    5) Very easily

5. How adaptable are your group classes for individuals with disabilities? (*Rate from 1-5*)

1) Not adaptable    2) Minimally adaptable    3) Somewhat adaptable    4) Easily adaptable  
5) Very easily adaptable

6. Individuals with disabilities can easily use the equipment provided by the gym: (*Rate from 1-5*)

1) Not easily    2)    3)    4)    5) Very easily

7. If you answered less than 5 for questions 4-6, what **barriers** do you think the gym or fitness classes may have for individuals with disabilities?