

Information Package on

AIMFREE

Accessibility Instruments Measuring
Fitness and Recreation Environments

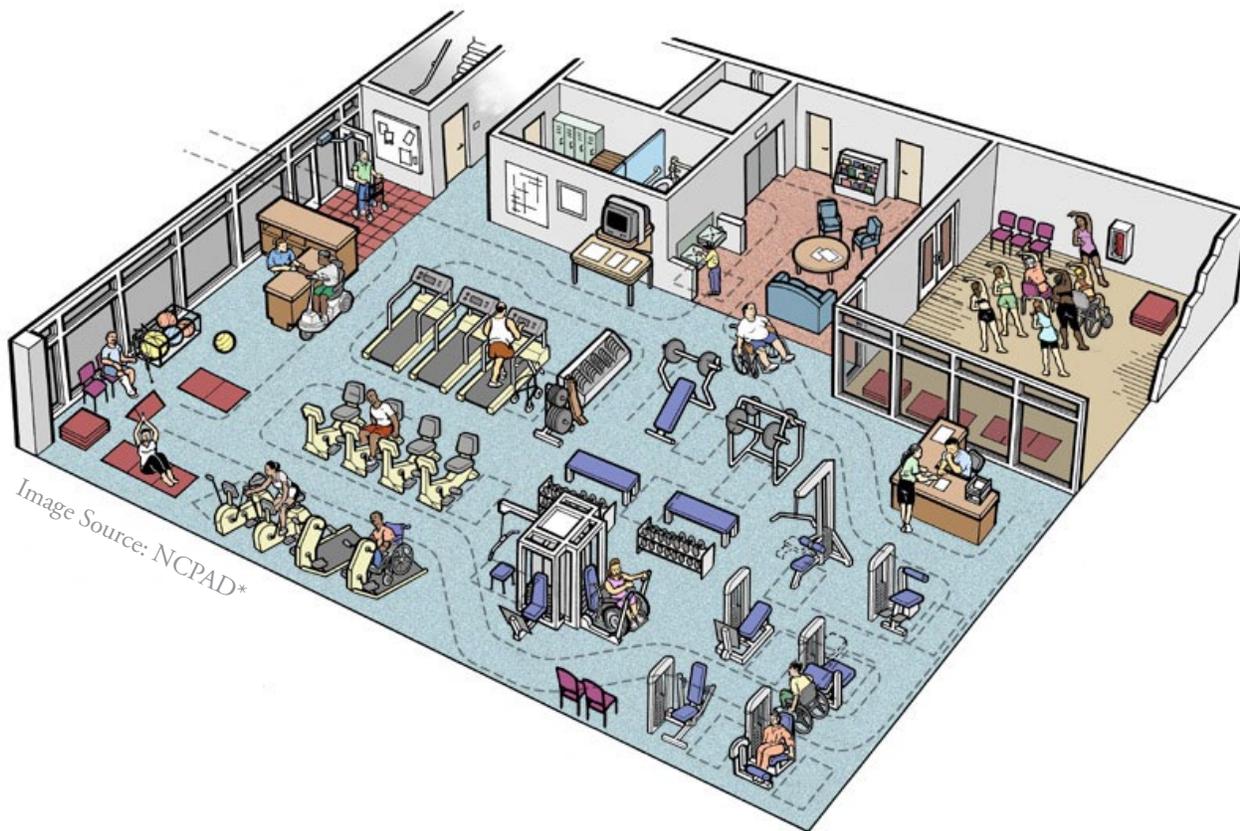


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KT4TT Intervention Tools - Series B:4 (2011)

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We acknowledge collaboration with and input from Dr. James Rimmer and colleagues from the RERC on Recreational Technologies Disabilities (RERC Rec-Tec) during the preparation of this document.

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I. FOREWORD

This information package is brought to you because of your research interest in exercise science, recreational environment and related technologies. As you work to advance theory and practice in your area of interest, hopefully you will find this information useful in expanding the sphere of influence of your work, so the benefits extend both to your fellow researchers and to society at large. Opportunities that you may take away from this information are detailed in a later section.

Specifically, the information package is about improving the lives of persons with disabilities, particularly the physically challenged. These individuals are an important segment of society, and potential beneficiaries of your work, whether your investigations address improving clinical practice, advancing theory or creating assistive technology solutions.

The purpose of the package is to present and discuss findings from an innovative research and development (R&D) project led by Dr. James H. Rimmer of the National Center on Physical Activity and Disability at the University of Illinois at Chicago. Dr. Rimmer and colleagues generated a collection of 16 survey instruments designed to measure accessibility of fitness and recreation environments focused on built environment, equipment, programs, policies, and training and behavior. The survey instruments are collectively referred to as **AIMFREE**, **A**ccessibility **I**nstruments **M**easuring **F**itness and **R**ecreation **E**nvironments. This package also presents potential benefits of AIMFREE to several stakeholders including researchers and discusses its implications for further research.

II. A CALL FOR INCLUSION

Dr. Rimmer's research addresses an unmet need of Americans with disabilities that are often unable to engage in an adequate amount of physical activity due to environmental access limitations. According to the U.S. Department of Health and Human Services' Healthy People 2010 Report, 56% of individuals with disabilities indicated having no leisure-time physical activity compared to 36% of their nondisabled counterparts¹. To date, a substantial number of fitness facilities do not provide inclusive environments because of architectural barriers, organizational policies and procedures, and lack of supportive and appropriate programs for individuals with disabilities². Inaccessible environments and low patterns of physical activity among the disabled population is a growing public health concern, as several individuals with physical disabilities are at risk of developing secondary health conditions related to their primary disability.

Dr. Rimmer and colleagues responded to this problem through the systematic development of the AIMFREE survey instruments. In a call for inclusion, AIMFREE addresses the first step in improving accessibility of fitness and recreation environments, as it highlights areas of concern within these facilities. Facilities looking to create a **total** accessible environment can use AIMFREE to evaluate the facility to identify acceptable areas to maintain as well as opportunities for improvement.

¹ U.S. Department of Health and Human Services. Healthy People 2010. Conference edition-volume II. Washington, D.C. 2000.

² U.S. Department of Health and Human Services. Healthy People 2010. Working Draft. Chapter 6: Disability and Secondary Conditions. Washington, D.C. 1999.

III. AIMFREE: DEVELOPMENT AND PROMISE

The abstract below summarizes the work of Dr. Rimmer and colleagues on AIMFREE. A full version of the research article is included on the enclosed CD. A print version can also be found in the right sleeve of the pocket folder. The abstract below is for your quick reference.

Research Abstract

Research Article: Development and validation of AIMFREE: Accessibility Instruments Measuring Fitness and Recreation Environments.

Dr. James H. Rimmer, Barth Riley, Edward Wang and Amy Rauworth. *Disability and Rehabilitation* 2004, Vol. 26, No. 18, Pages 1087-1095.

Abstract:

Purpose. The purpose of this study was to develop and validate a series of 16 survey instruments measuring fitness and recreation accessibility, collectively referred to as AIMFREE (Accessibility Instruments Measuring Fitness and Recreation Environments). General domains of assessment include the build environment, equipment, programmes, policies, and training and behavior.

Methods. Fitness and recreation professionals (n=35) assessed fitness centres/swimming pools (n=35) in nine regions across the US. Rasch analysis was used to assess the psychometric properties of the instrument.

Results. The AIMFREE evidenced adequate to good fit to the Rasch model and adequate to good internal consistency ($r = 0.70-0.90$). Test-retest reliability ranged from 0.70 (entrance area) to 0.97 (swimming pools). Analysis of differential item functioning indicated that item calibrations generally did not differ significantly between urban and suburban environments.

Conclusion. The AIMFREE instruments demonstrated adequate to good fit to the Rasch model with several of the subscales demonstrating well to excellent separation of facility accessibility.

AIMFREE: Tool Description

There are two versions of AIMFREE – a *consumer* version for use by persons with physical limitations and a *professional* version for use by fitness facility owners and other interested parties. An electronic copy of the professional version is located on the CD-ROM enclosed in this package. It contains 15 sections with questions addressing key areas and components of fitness and recreation facilities. As it is an objective survey instrument that evaluates a fitness facility’s compliance with accessibility guidelines, many questions require the survey administrator to take measurements throughout the fitness facility. Its purpose is to assess the **total** accessibility of fitness and recreational environments. Uniquely, AIMFREE items embrace the Americans with Disabilities Act (ADA) standards for evaluation criteria, but go well beyond these standards to address additional areas, including fitness programs, services, equipment, and staff behaviors and policies.



It is important to note that Dr. Rimmer’s research team at the Rehabilitation Engineering Research Center on Recreational Technologies (RecTech) at University of Illinois-Chicago provide actionable feedback to individuals that complete the AIMFREE survey and send their responses. The service includes reviewing the answers and making practical recommendations on how to improve accessibility. Data from AIMFREE users thus serves to build a valuable research database.



Table 1 lists the subscales of the instrument including these different elements of a fitness facility acknowledged by the ADA guidelines (see last column) and covered by AIMFREE.

Table 1: AIMFREE Subscales and Included Gym Elements for Accessibility Considerations.

Subscales	Example Items	Covered in ADA
GENERAL MEASURES OF ACCESSIBILITY:		
Bathrooms	Are towel dispensers and /or hand dryers easy for a wheelchair user to reach?	✓
Elevators	Are grab bars provided on each side wall of elevator cabs?	✓
Entrance Areas	Is a push button available to open entrance areas?	✓
Parking Lot	Do parking spaces that are designated as accessible have an access aisle adjacent to parking space?	✓
Telephones	Is there at least one public telephone per floor, or one per bank of telephones, equipped with an amplifying device for individuals with hearing impairments?	✓
Water Fountains	If there is more than one water fountain in a particular area, are they mounted at different heights, serving seated and standing users?	✓
FITNESS CENTER-SPECIFIC MEASURES OF ACCESSIBILITY:		
Exercise Equipment	If exercise equipment has handgrips or handles, can they be moved out of the way in order for individuals to transfer onto the equipment?	No
Fitness Program	When a person enrolls in a program, is the person asked if he or she requires any accommodations?	No
Hot tubs & Saunas	Is there an emergency button in the sauna /steam room?	No
Information & Signage	Is signage provided in order to distinguish between accessible areas / facilities and non-accessible areas / facilities?	✓
Locker rooms	Are paths leading from the locker room to other areas of the facility free from obstacles?	✓
Facility Policies	When your facility is about to undergo structural modifications, are individuals with disabilities invited to provide input?	No
Professional Behavior	Did staff members ask consumers if they needed assistance before attempting to help them?	No
Professional Support /Training	Is staff trained in the performance of wheelchair transfers?	No
Swimming Pool	If there is only one accessible means of pool entry and exit, is this accessible means a pool lift, zero-depth entry, or wet /dry ramp?	✓

Development of AIMFREE

The AIMFREE survey instruments were developed over a series of three phases. Researchers selected the setting of fitness facilities and recreation environments of most interest to individuals with disabilities in the first phase. The items were developed in the second phase, and AIMFREE was pilot tested in the third phase.

Phase 1 - Setting selection. A national survey that addressed individuals' interest in participating in various types of fitness facilities, current use of fitness facilities, and perceived accessibility of facilities was administered to 1000 individuals with physical disabilities nationwide. The selection of the type of facilities to be assessed was based on data from the completed surveys of 361 respondents.

Phase 2 - Item development. In order to obtain a thorough understanding of accessibility concerns in fitness facilities and recreation environments across the United States, Dr. Rimmer held group discussions across 10 regions, four in each region. People with disabilities, fitness professionals, architects, and city planners participated in these discussions to identify barriers to the use of fitness centers and gyms by people with disabilities. Topics included motivation, transportation issues, equipment access, participation in programs, skills and attitudes of fitness professionals and other related issues. Questions for AIMFREE were developed based on concerns discovered during the discussions as well as information from the Americans with Disabilities Act (ADA) Accessibility Guidelines.

Phase 3 - Pilot Testing. Following item development, clarity of the items were reviewed by Dr. Rimmer's research team as well as an expert panel consisting of 6 accessibility professionals.

AIMFREE Stakeholders: Who are they?

Individuals with physical limitations who are interested in using fitness /recreational facilities and need inclusive environments are the ultimate beneficiaries of AIMFREE (both consumer and professional versions). However, these individuals are not the only stakeholders that can benefit from its use. Consider AIMFREE's potential to create inclusive fitness and recreational environments. Stakeholders of AIMFREE can contribute to and benefit from inclusive environments; they have the potential to make fitness and recreational facilities a successful experience for all.

*Who would, or should, be using the instrument to create such environments?
What key roles do these stakeholders play?*

Fitness Facility Owners can evaluate their own facilities and address environmental access limitations by introducing accommodations based on AIMFREE feedback. Often, very small, low cost changes can achieve dramatic improvements in a facility's accessibility (See figure 1 on page 8). By doing so, they can benefit by increasing customer satisfaction and retaining a solid clientele base.

Certified Fitness Professionals and Facility Staff can use appropriate sections of AIMFREE to assess and accommodate staff interactions to the needs of consumers with disabilities, and help cultivate a disability-sensitive environment. In doing so, they attract more clientele and raise their professional visibility.

Fitness Equipment Manufacturers can use AIMFREE to identify equipment limitations and plan for future modifications and innovations, as illustrated in the chest press in the adjoining picture. By doing so, they can broaden their market for fitness equipment by reaching the currently untapped and growing disability market.



Photo used with permission from
Cybex International, Inc.

Accessibility Consultants such as Independent Living Centers can use AIMFREE in their services to provide the community with information regarding accessibility standards and guidelines, and help businesses become more accessible and inclusive.

Individuals with Physical Disabilities can also advocate for equal access to the gym of their choice. By providing fitness facility owners with information about the professional version of AIMFREE, they can help owners understand the importance of complying with and going beyond accessibility standards to ensure a successful experience for all.

Researchers in the area of Fitness and Exercise Science can create inclusive environments using AIMFREE, both individually and in collaboration with the above professionals. While this is an opportunity to contribute to the improved quality of life for the disability population - the ultimate beneficiaries of AIMFREE - it can also lead to benefits to the researcher community, in the form of enhanced research quality, consequently increasing impact from their research and raising research visibility. More information is provided in the next section.

RESEARCH UPDATE:

To date, the article on AIMFREE has been cited 23 times. Dr. Rimmer and colleagues at Rec-Tech have advanced the work on AIMFREE in several directions, such as - proposing a community based conceptual framework for achieving accessibility in incremental changes^a investigating accessibility of health clubs^b, and use of AIMFREE for online assessment.^c

^aRiley, BB, Rimmer, JH, Wang, E and Schiller, WJ. (2008.) A conceptual framework for improving the accessibility of fitness and recreational facilities for people with disabilities. *Journal of Physical Activity and Health*, 5, 158-168.

^bRimmer, JH, Riley, BB, Wang, E and Rauworth, A.(2005).Accessibility of health clubs for people with mobility disabilities and visual impairments. *American Journal of Public Health*, Vol. 95, No. 11.

^cRimmer, JH, Zhu, W, Padalabalanarayanan, S,Boiarskaia, E and Lullo, C. (2010). Online environmental assessment tool and use of computer adaptive testing for achieving optimization of fitness and recreation facility accessibility. State of the Science Conference.

FIGURE 1 on the following page illustrates the inclusive fitness and recreation environment that can result from the work of multiple stakeholders based on AIMFREE, while also benefiting from it. Observe how reorganization of furniture and equipment can improve paths of travel and workout space for individuals with special mobility needs.

Figure 1. Accessible and Inaccessible Fitness Environments.

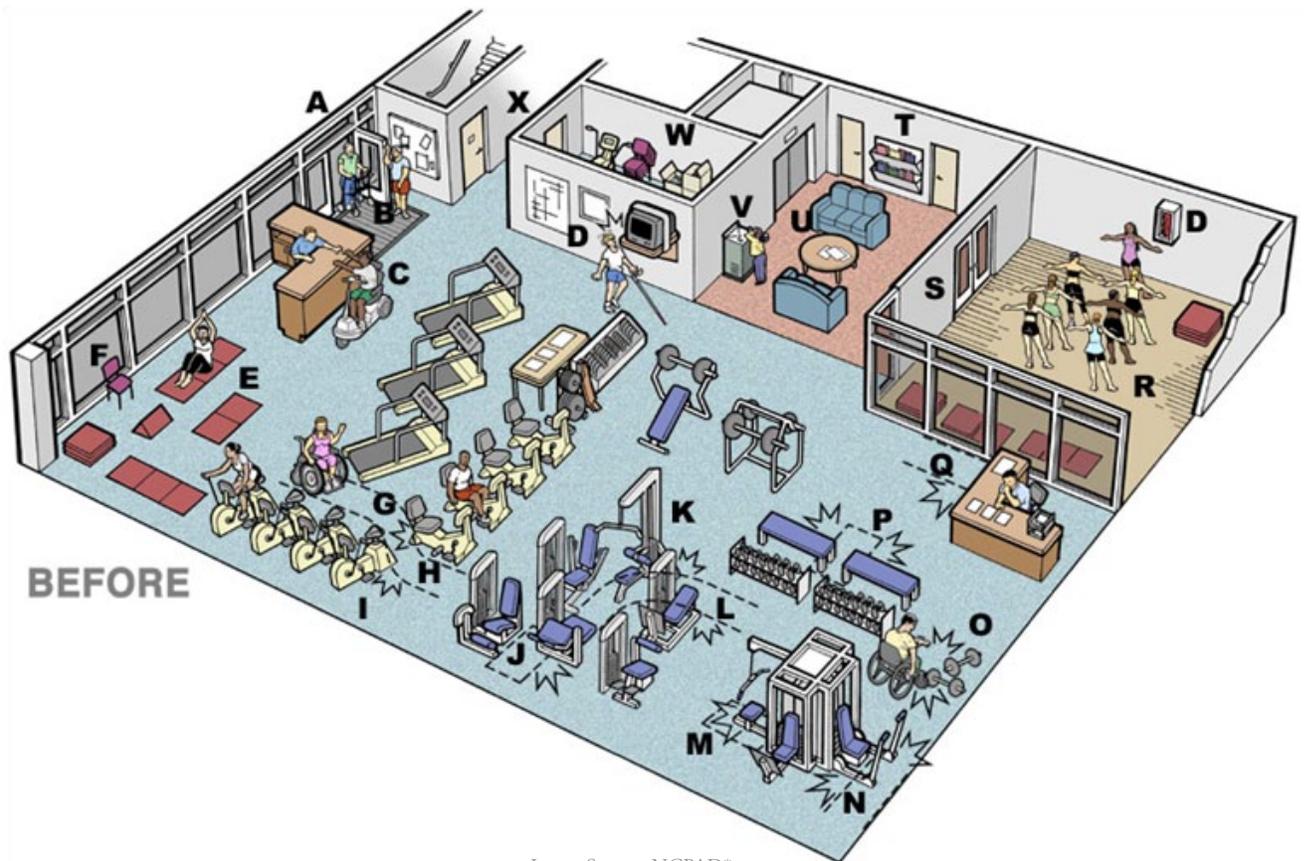
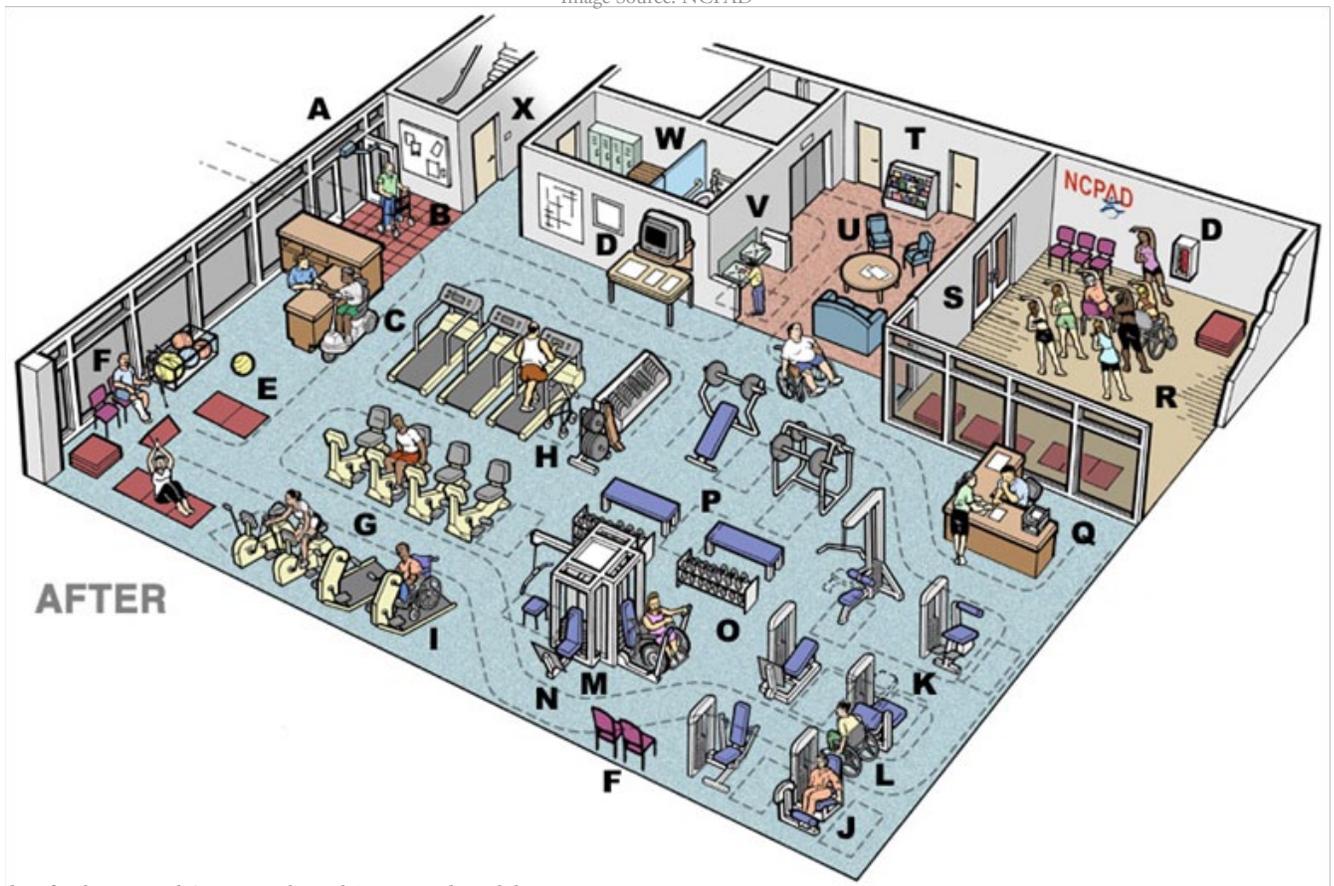


Image Source: NCPAD*



*Funding for the National Center on Physical Activity and Disability is supported by Grant/Cooperative Agreement Number U59DD000437 from the Centers for Disease Control and Prevention's National Center on Birth Defects and Developmental Disabilities (NCBDDD).

IV. RESEARCH & DEVELOPMENT OPPORTUNITIES

What future directions are indicated by the work started by Dr. Rimmer's research and development project? What opportunities does it open up for other researchers? As mentioned earlier, including the AIMFREE survey instruments in your investigations might enhance value, whether your research orientation is to promote evidence-based clinical practice, advance theory or promote development of technological solutions in your research area. It can enrich research quality. It can help create inclusive environments. Ultimately, it can improve the quality of life of persons with physical disabilities, and enhance impact from your research. The following are a few suggestions but by no means exhaustive.

Use AIMFREE to Enhance Research Quality and Evidence-Based Practice

Clinical researchers engaged in evaluation of interventions, service provision and related programs, who address issues such as outcomes assessment and treatment efficacy might find a need to assess accessibility as part of their investigation. AIMFREE might fill this need and ensure your research quality. In this regard, two scenarios can be considered.



In the first scenario, the researcher is studying *disability populations* in particular. Accessibility becomes a variable of interest in addition to fitness and exercise related variables. For example, a comparison of program efficacy on participants with disabilities with their nondisabled counterparts needs to ensure accessibility of the locale where the investigation can be conducted. Or, using the appropriate sections of AIMFREE, one can study the effect of staff attitudes (interaction domain) or equipment accessibility (equipment domain) on certain fitness variables such as exercise level, health status improvement or simply participants' interest /regularity

of attendance. In this scenario, AIMFREE makes it possible to study disability issues and variables otherwise difficult to be included in the research agenda. It allows *expansion* of research to include this very important but often neglected minority population, in the numbers that you need.





In the second scenario, where disability population is not the direct focus of research, clinical investigators of exercise and fitness related variables might still find AIMFREE useful. AIMFREE can assess the accessibility of environments that are necessary to include persons with mobility and visual limitations in your sample size. It can either allow you to choose the site you need for effective investigation of the variables involved, or, let you document the limitations of your research in this regard.

By supporting “inclusive” investigations, AIMFREE can enhance design quality; it can provide an expanded and more representative sample, making results more generalizable. In addition to increasing *research quality*, clinical investigators can thus respond to the call to do *inclusive evaluation*^{3, 4} by not excluding vulnerable, yet eligible, populations. The adjoining statistics predict a significant proportion (25%) of the future American population is likely to have physical limitations⁵. These statistics should alert the future researcher about implications for research credibility of studies that do *not include* this segment in their samples.

FACTS FOR THE RESEARCHER....

(www.disabilitycanhappen.org/chances_disability/disability_stats.asp)

Today....

- ◆ 36 million (12%) Americans are classified as disabled.
- ◆ Over 30 million are between 21 and 64.
- ◆ Over 25 million are restricted by disability effects.

Tomorrow.....

- ◆ 25% of today's 20 yr olds will become disabled before they retire.

³ Mertens, D.M. (2003). The Inclusive View of Evaluation: Visions from the New Millennium. In: Donaldson, S.I. and Scriven, M. (ed). Evaluation of Social Programs and Problems. NJ: Lawrence Erlbaum Associates.

⁴ Mertens, D.M. (1999). Inclusive Evaluation: Implications of Transformative Theory for Evaluation. American Journal of Evaluation, Vol. 20, No. 1, 1999, pp. 1-14.

⁵ Social Security Administration, Fact Sheet March 18, 2011.

Please note that collaboration with industry and practitioners is a great opportunity to effectively implement clinical research, while you conceptualize, develop and evaluate what works. Certified fitness trainers, facility owners, managers and/or access consultants can facilitate access to inclusive fitness environments and help in the implementation of your research. Manufacturers can provide technical assistance to collaborating researchers by providing instruction for using accessible exercise equipment.

Collaborators can...

- (1) Guide /obtain resources – ex. AIMFREE from RecTech, their feedback, and technical assistance.
- (2) Identify accessible facilities in their community and /or advocate for accommodations.
- (3) Assist participants in their exercise and physical activities.
- (4) Provide environments in which individuals with physical limitations can exercise.

Use AIMFREE to Build /Expand Database in Your Research Area

As previously mentioned, Dr. Rimmer welcomes data from fitness and recreational facilities that request actionable feedback from his team, thus building a database of valid and reliable descriptions (profiles) of accessible facilities. Individual researchers that survey facilities of interest can join forces and contribute to enrich this valuable repository for the use of all stakeholders. As Dr. Rimmer mentions in the conclusion section of his article (see enclosure), the tool is generalizable across urban and suburban environments. Study of rural environments may be an opportunity for expansion. Large-scale survey undertakings in general are another option, which can obtain geographical or regional profiles for the benefit of stakeholders. Researchers can also contribute by using sections of AIMFREE to investigate the state of the art of fitness environments on specific fronts – such as accessible equipment, accessible services, and other domains of AIMFREE. Any of all of the above opportunities strengthen the current data resource for fellow researchers interested in this area.

Use AIMFREE to Create/Expand Assistive Technology Solutions

While the use of AIMFREE to create inclusive environment helps improve the quality of life of persons with mobility and vision limitations, researchers can use sections of AIMFREE for various purposes. The equipment section can help technology-oriented researchers assess limitations and conceptualize assistive technology solutions for persons with disabilities.

For those who are interested in studies contributing to assistive technology development, this document has two important messages and related opportunities. As you may be aware, funders are increasingly recognizing the promise that your work holds for societal impacts through benefits to users. While it sets high expectations for R&D scientists, it is also an opportunity to raise the visibility and impact of your research. A distinguishing aspect of Rimmer's research study is that individuals with physical limitations (the intended beneficiaries) were a fundamental source for identifying specific items to be included among the AIMFREE survey questions. Developing "solutions" by first having the "need" in mind helps ensure the relevance of the evidence generated, in addition to its quality. While this concept is not new to many researchers, it sends an important message for knowledge creators in general: an efficient way to achieve impact through R&D results is to start with a vision of the end product and to frame studies geared toward unmet needs of end users.

Second, researchers can benefit from collaborative work with manufacturers or facility owners who are involved in creating accessible environments. Over the longer term, pursuing SBIR or other federal agency funding to create accessible exercise equipment and other technology in partnership with innovative enterprises can be a rewarding experience.

Partnering with Industry.....

- (1) Leverage resources through collaborative projects under funding mechanisms such as Small Business Industry Research (SBIR) that support both academia and industry.
- (2) Get valuable expertise from businesses regarding commercial transfer of research results.
- (3) Use businesses as a valuable source of research topics. Businesses need data (for example, demographics of persons with disabilities, what works for specific product features, consumers' changing needs) which researchers can supply.
- (4) Build capacity of graduate students by involving them in the business's work; business staff can participate as guest lecturers in researcher programs.
- (5) Businesses can be an asset to implementation of research studies. Ex: as a source for consumer samples; assist with technical know-how, email surveying and information dissemination; give access to in-house material.
- (6) Enhance dissemination of research; Co-author with the business on conference papers, articles and/or grant opportunities.

In general, expanding scope of research to include diverse /multiple professionals can lead to increased applications of research studies. Concrete products and services resulting from the studies, demonstrated to benefit the target beneficiaries raise the visibility of the research work behind them by society at large. Over time, as more facilities become inclusive, fitness for all becomes a reality; bringing returns to the researcher community by raising research quality, research visibility and research impact.



Advance Psychometric Research

If your research orientation is theory building, which seeks to close knowledge gaps related to conceptual and methodological issues, there are several opportunities that Rimmer's study opens up for future investigations. Some future directions are pointed out by the authors in their discussion section (See enclosed research article). To the extent appropriate, you may address these as hypotheses in your own future studies:

- A few of the subscales did not perform as well psychometrically. Replication studies involving these might be an opportunity for further investigation.
- Future research is needed to establish norms among accessibility instruments. Adding to Dr. Rimmer's current database or conducting new investigations in collaboration with Dr. Rimmer's team might be opportune.
- Instruments for people with cognitive disabilities are indicated by Dr. Rimmer as a need area. Psychometric/methodological researchers might consider this opportunity.

On the other hand, psychometric researchers might further their own work by building upon AIMFREE's methodological strengths (i.e. use of Rasch model) or the above mentioned limitations.

V. EPILOGUE

It is hoped that the contents provided in this package will meet the information needs of your work as you continue to make a difference in the lives of persons with disabilities. The intent of the package is to disseminate the enclosed innovative findings and present relevant research opportunities for your consideration. Feel free to include it in your future scope of work in any way you think appropriate. For further questions and clarifications, see contact information below.

ALSO.....
Stay tuned for ...
.....a future webcast
on this important topic!

VI. COPYRIGHT AND CONTACT INFORMATION

The AIMFREE Tool is copyrighted by Dr. James H. Rimmer and unauthorized use or distribution of the AIMFREE Tool is prohibited. However, a free copy of the professional version of AIMFREE Tool in CD format is included with this information package. We ask that this copy be used for research purposes only and that you do not duplicate it (on another CD or in print) or share it with others.

If you would like to find out more about AIMFREE or need assistance with using the AIMFREE tool or scoring, please contact Sue Arnold:

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VII. ENCLOSURES

Enclosures are located in the right sleeve of the pocket folder. Enclosures include:

[a] Cover Letter

[b] Research Article on AIMFREE: Development and validation of AIMFREE: Accessibility Instruments Measuring Fitness and Recreation Environments. *Disability and Rehabilitation*, 26 (18), 1087-1095.

[c] A CD-ROM with electronic versions of:

- 1. Cover letter
- 2. Information Package
- 3. Research Article
- 4. AIMFREE Survey Instruments (AIMFREE Tool)