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## Aquatics for Individuals with Disabilities: An Analysis of Publication Trends

Susan J. Grosse  
sjgrosse@execpc.com

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### **Abstract**

This study investigates the published literature in the field of aquatics with disabilities; more specifically, it examines literature published during the most recent two decades, 2000 through 2019. Considerations include the content focus of published articles relating to aquatics with disabilities, distribution of articles over the specified time period, publication opportunities for authors, barriers as well as enhancements to development of literature in the field, and summary recommendations.

*Keywords:* individuals with disabilities, adapted aquatics, swimming, publication trends

Part of the quality and value of any professional field can be defined by an analysis of the published literature related to that field. Published literature helps clarify definitions, establish constructs, further common beliefs, recognize individuals with experience, and determine future endeavors. Publications in a field serve to generate discussion, clarify confusion, stimulate research, and influence professional practice. Sometimes publications can affect professional advancement, or lack thereof. This is as true for aquatics for individuals with disabilities as it is for any other discipline. What is the status of the literature in the field of aquatics for individuals with disabilities?

This study investigates the published literature in the field of aquatics with disabilities, more specifically, literature published during the most recent two decades, 2000 through 2019. Considerations include the content focus of published articles relating to aquatics with disabilities, distribution of articles over the specified time period, publication opportunities for authors, barriers as well as enhancements to development of literature in the field, and summary recommendations.

### **Analysis Variables**

The *Grosse Adapted Aquatics Database: Ten-Year Addendum* was used as the basis for this analysis of the years 2000 through 2009 (Grosse, 2010). All entries in this *Addendum* are serial print media publications. Entries in this database were first sorted to eliminate any publication prior to the year 2000. Next, the resulting material was sorted again to eliminate any material published in book format (a.k.a., monograph). What resulted was a list of 54 periodical publications related to aquatics for individuals with disabilities containing 259 articles.

For the years 2010 through 2019 several online databases were searched with the same criterion. What resulted was a list of an additional 65 periodical publications with 102 articles. In both decades some periodicals were published in

both decades. Also, some periodicals that published more than one qualifying article related to aquatics for individuals with disabilities. This provided a total of 119 periodical publications and 361 articles over the stipulated 20-year period. These numbers include 6 periodicals that published articles related to aquatics for individuals with disabilities during both separate decades. (See Appendix)

To further clarify, content of all entries selected for analysis was specific to aquatics for individuals with disabilities in the broadest use of terminology. Not included in the analysis were articles of a purely medical nature. There is a very fine line between an aquatic activity that is therapeutic (included entries) and aquatic activity that is based on medically prescriptive treatment (entries not included). While there might, at times, have been overlap, every effort was made to include material appropriate for broad field use, as opposed to content specific to application in a medically prescriptive environment.

Once all articles were identified, they were further reviewed and classified based on the type of publication in which they appeared. Eleven publication categories resulted and are listed below in alphabetic order.

- Adapted physical education/therapeutic recreation (APE/TR)
- Aquatics
- Aquatic (water) exercise
- Aquatic (water) therapy
- Disability specific (Disability)
- Education
- General information
- Medicine
- Physical education/Recreation
- Rehabilitation (Rehab)
- Sport Science (Sport Sci)

Within each publication category, specific periodicals were identified. In addition, we broke each category into single year periods and tallied each specific year for each category of publication. Once these data were compiled, the resulting information was analyzed to determine the types of publications represented, the amount of material published in each publication category, and the distribution trend over the decades. This analysis was the basis of recommendations for future literature development in aquatics for individuals with disabilities (see Appendix).

### **Analysis Results**

The distribution of published articles over the twenty-year period is detailed in Table 1 (see p. 5). Based on the yearly publication statistics, there was neither

growth, nor decline in frequency of publication of articles on aquatics for individuals with disabilities over the first decade. The range in published articles each year went from a low of six articles in 2003 to a high of 37 articles in 2008. The year 2009 had the second lowest count of 19 articles published, while 2001 had the second highest with 36 articles. As seen in both Table 1 and the Appendix, no chronologic trends are readily identifiable.

### **Trends in Publishing**

The number of published articles decreased greatly during the second decade, dropping from 259 to only 102 articles. Precipitating factors for this drop included, but were not limited to:

- *Changes in publishing practices.* During the more recent decade self-publishing has grown significantly. Authors no longer need to submit an article and wait up to a year for periodical print publication. Anyone can set up a web site and publish. Material presented in this manner did not meet the criterion for this study and therefore were not included.
- *Losses in the field* generated by publishers of appropriate material ceasing publication. For example, *The Aquatic Therapy Journal*, publisher of several dozen broad field articles from 2000 through 2009, stopped publication in 2010.
- *First person accounts*, which often included information on equipment and adaptations, have become blogs and other postings on social media, rather than published articles.
- *The rise of inclusion and inclusive programs* has given the impression that no special information is needed to provide programming for individuals with disabilities. This has caused not only a possible reduction in the number of publications and appropriate articles but has also generated a shift in publishing focus. While articles in adapted activity, and therapeutic disciplines appear to have decreased, articles related to very specific disabilities have doubled. For example, information related to general physical education have decreased significantly, articles related to physical education, as well as other activities, for very specific types of disabilities have increased. Based on informal observation, the most prevalent disabilities appearing in publications during the more recent decade are autism, visual impairment, and Down syndrome.
- *Web based aquatic program pages have increased* and within that increase has come the inclusion of informative articles, conversations, and webinars where knowledge can be shared in a timely manner. For example, the web

page for the Association of Aquatic Professionals contains a wealth of such material that might otherwise have resulted in serial periodical publication.

- *Individuals with disabilities are no longer being viewed as a group.* Again, consider the doubling of disability specific articles. It is no longer about aquatics for a group, but rather about aquatics for specific individuals.
- *There has been an increase in the number of individuals with disabilities participating in sport at all levels of engagement.* This is demonstrated not necessarily by an increase in articles, but in the number of different publications in the sport science field publishing articles related to individuals with disabilities.

It is quite possible that this analysis did not include each and every published article. Because for the first decade, the analysis was done just a year after the concluding date, some material might as yet not be included in on-line search results. For the second decade, searching the internet became more about excluding search criteria, than in including the original criterion. There is a proliferation of program information available. Personal accounts, U-tube and other social media, and non-academic web sites and search sites muddy search results. Given the current state of web-based information gathering, accuracy is extremely difficult and therefore the data presented here are easily suspect and should be viewed and interpreted with caution.

### **Representative Publications**

A total of 119 different print serial publications are represented in this analysis. There is wide variety in the distribution of publications within each category. The highest academic level periodicals are those that employ double blind peer review of articles prior to acceptance for publication. Examples include the *Adapted Physical Activity Quarterly*, *American Journal of Therapeutic Recreation*, *JAMA*, and the *International Journal of Aquatic Research and Education*. At the opposite end of the spectrum are community and organizational publications. In between are a variety of publications that may, or may not, review material prior to publication. Authors may have verifiable education and/or experience or may not.

While all the publications included in this analysis are print media, abstracts may, or may not, be available on-line. Further complicating the analysis is variance in publishing schedules. Some publications, such as the *Aquatic Therapy Journal (ATJ)*, responsible for significant number of articles (40 out of 46 in category), have ceased publishing. Clearly, this will affect future publishing opportunities as well as narrowing the breadth of information available in the field.

**Table 1**  
*Distribution of Published Articles by Year (2000-2009/2010-2019)*

	00/10	01/11	02/12	03/13	04/14	05/15	06/16	07/17	08/18	09/19		2000/2019
APE/TR	3/0	8/0	2/0	0/0	8/0	5/0	2/0	4/0	4/0	1/0		37/0
Aquatics	3/1	1/0	2/0	0/2	2/1	0/1	0/0	3/0	8/0	4/0		23/5
Aquatic Exercise	0/3	10/1	8/1	0/1	8/0	4/0	2/1	6/0	3/1	0/0		41/8
Aquatic Therapy	4/2	7/0	8/0	0/2	6/2	3/1	9/0	5/0	2/0	2/1		46/8
Disability	0/6	0/1	1/2	2/3	2/4	1/0	5/3	4/3	4/5	0/11		19/38
Education	1/4	0/2	0/1	1/0	0/1	0/4	0/1	0/0	1/1	0/3		3/17
General Information	0/1	1/1	0/2	1/2	0/4	1/1	1/0	1/1	0/0	0/2		5/14
Medicine	1/0	1/1	0/0	1/0	1/0	2/0	1/0	2/0	3/0	0/0		12/1
Physical Education/ Recreation	2/0	2/0	2/0	0/0	7/0	2/1	3/0	1/0	1/0	0/0		20/1
Rehab	1/0	3/0	5/0	0/2	2/0	3/0	6/0	3/1	8/1	7/1		38/5
Sport Sci	1/0	3/0	2/1	1/0	0/1	1/1	1/2	2/0	3/0	1/0		15/5
	16/17	36/6	30/7	6/12	36/13	22/9	30/7	31/5	37/8	15/18		259/102

On the other hand, the *International Journal of Aquatic Research and Education (IJARE)*, with its inception in 2007, almost dovetails with the end of the *Aquatic Therapy Journal*. Though *IJARE* has a broader focus than *ATJ*, the presence of *IJARE* in this list demonstrates aquatics for individuals with disabilities is represented in its content. Other publications, particularly those publishing on a more sporadic basis and/or stopping and starting publishing on a random schedule, may not field substantive material, as authors will be hesitant to submit to publishers with unstable publishing records.

This current analysis did not intend to place a value judgment on any level of publication. Sometimes the most useful information comes from a first person account in a disability-specific periodical. The more content specific the publication, the narrower the readership distribution likely will be.

National and international level periodicals are usually indexed in academic databases. It was possible to locate this information through a library, internet search, or through SPORTDiscus. Publications not so indexed were received only by subscribers and distribution was often limited, at best. While there were quite a few unindexed publications included in this analysis, it was also very possible others may become available at a later date.

The Appendix lists the specific periodicals represented in each category. Following the category title is the number of articles distributed among the specific publications listed. It is significant to note that the number of individual publications listed increased significantly from 54 during the first decade to a total of 119 for the entire twenty-year period.

### **Recommendations**

Why is it important to understand the distribution of published material in aquatics for individuals with disabilities? Wider distribution complicates the situation for potential authors in selecting a target periodical for submission. This variation makes specific articles more difficult to locate for those seeking information in the field.

At first glance, it would appear the wide distribution of articles published is a negative factor in defining aquatics for individuals with disabilities. There is no concentrated source or body of material to refer to. This means potential authors may experience difficulty in finding a publication suited to their area of expertise. Each of the categories serves a valuable role in defining the field and should be considered an information source, as well as publishing target. For example,

- Within the literature on adapted physical education/therapeutic recreation

(APE/TR), content related to aquatics provides teachers and recreation personnel who work directly with individuals with disabilities information they can use to provide quality programs for their participants.

- Professionals in general aquatics need to be aware of how and why participation in aquatic activities can and should be facilitated for all segments of the population.
- Aquatic exercise professionals often provide a clinical link between medically prescriptive hydrotherapy therapy and general aquatic fitness participation. Publications in the field of aquatic exercise can clarify this important role.
- A variety of aquatic professionals work within therapeutic aquatics. Some of these individuals work outside of prescriptive medical practice, but within the bounds of appropriate specialized activities to improve quality of life for participants. Providing on-going support for aquatic participation by individuals with special needs can be facilitated by development of literature in this aspect of the field.
- Publications that are disability-specific can serve a very valuable role in that they provide highly focused information to professional and lay people alike, often information that cannot be obtained anywhere else. Because this type of publication exists to serve a very small segment of the general population of individuals with disabilities, highly specialized articles can be published, where this same type of article might not be considered for a more mass-market publication.
- For topics related to school-age children with disabilities, publication in education-related periodicals is critical. Aquatic professionals often have to justify time spent in the pool, in comparison to time spent in the classroom or therapies. For children with disabilities a child's individual education program (I.E.P.) must contain not only activities, but also goals, objectives, and sometimes rationalizations. Aquatic articles within educational publications help support aquatic activity for children with disabilities.
- General information publications inform the world. Aquatics for individuals with disabilities articles deserve to be known and appreciated for all they can contribute to the health and wellbeing of participants. Voters need to understand and appreciate the field of aquatics for individuals with disabilities when decisions on spending for local facilities and programs must be made and when schedulers allocate pool time,.



- Having a presence in periodicals for medical professionals is extremely important for aquatics for individuals with disabilities. Often a doctor must recommend an activity for rehabilitation, weight loss, or general health enhancement. As the doctor's recommendation may affect insurance reimbursement, obtaining that recommendation may be critical to an individual's continued participation. These medical professionals must be informed to make appropriate recommendations.
- Physical education/recreation personnel often work in general aquatics. With inclusion playing a role in regular education, these personnel must be prepared to lead and teach individuals with disabilities in aquatics, just as they do in a wide variety of other activities.
- The value of aquatics to individuals needing rehabilitation, particularly rehabilitation for orthopedic conditions, is great. The rehabilitation therapist needs to not only be aware of this value, but also be able to plan and carry out treatment programs that take advantage of the unique properties of the aquatic environment.
- Professionals in sport science work within the scope of performance enhancement need to understand aquatics for individuals with disabilities. Focusing their attention on aquatics for individuals with disabilities gives athletes with disabilities a better chance of success in aquatic competitions.

The wide variation in academic sophistication of publications appears to be a disadvantage. Although double blind, juried publications are the academic gold standard, other types of publications provide very viable information sources as well as publishing targets. For example,

- Local and national organization publications are good sources for first person success stories and "how we did it" articles. They are also a wonderful target for beginning authors, as publication standards may not be as stringent.
- Lesser-known and smaller circulation periodicals carry articles which are often unique in that they explore content specific to that publication. This specialized content may not be generally available to a wide readership.
- Periodicals published by national organizations, whether related to aquatics or outside of the immediate aquatics area, carry articles that broaden perspective, reminding us to consider the whole person, rather than just a disability. Organizations also provide published information on a wide variety of specific aquatic interest areas.

- Infrequently published periodicals are much harder to find and not particularly good targets for authors trying to publish in a timely manner. They should not be overlooked. When these publications do publish articles, the content can be of high quality.

What does this mean for individuals seeking information on aquatics for individuals with disabilities? It means information needs to be sought far and wide. Do not limit a search for information to a particular periodical or subject category. From a newsletter to a regularly published, juried periodical, all aquatic publications should be subject to perusal.

When searching, investigations should be based on disability group, specific aquatic activity, level of aquatic participation, and relevant national organizations. It should include the areas of fitness, sports (recreational and competitive), education, medicine, recreation, rehabilitation, and general information. Lastly, one should not forget all the related aspects of aquatics, swimming, small craft, water exercise, synchronized swim, competitive swim, water safety, and lifeguarding when searching. Each aquatic area can be further subdivided based on specific participation interest and expertise.

The internet makes the search process much easier, as there is much more information being placed into cyberspace than ever before. While casting a wide informational net, also be sure to verify informational sources. Not everything in publication, particularly published on the internet, is credible information. Anyone can publish on the internet. This is much different than publishing print media. Self-publishing print media is expensive, and few individuals undertake the task. Therefore, print media functions as “gatekeepers” – individuals charged with verifying sources and author credentials and insuring veracity of material. With material found on the internet, the reader must also scrutinize the credentials of the author, as well as the posting site.

The internet has also opened access to publications from countries around the world. Several international periodicals are represented in the publications listing cited earlier. While most of these are in the Sport Science category, with time other areas of aquatic engagement should also become available.

What does this mean for authors knowledgeable in aquatics for individuals with disabilities? It means aquatic professionals interested in individuals with disabilities should write and share their experiences and expertise. Social media, while convenient, is not enough to support the dissemination of quality information in the field of aquatics for individuals with disabilities. The field needs publications in all the categories in this analysis. While 361 might seem like a relatively large

number of articles, distributed as widely as these are, and over twenty years, these are really very few.

Individuals with disabilities span the entire age spectrum. There are hundreds of disability conditions and an infinite combination of disability circumstances. This creates a gigantic topical mix of potential for writing. Frequently, authors seek to publish only in periodicals very specific to the construct in which they work in aquatics for individuals with disabilities. This is a very limited view of publishing opportunities. In addition, some authors attempt to publish only in periodicals viable for academic credit and/or advancement. If successful, this may be worthwhile for the academic author, but this practice also puts unnecessary limits on the overall number of publications in aquatics for individuals with disabilities. Whether that writing is for a local publication or for an international periodical – educational, medical, or aquatic – someone, somewhere could benefit from what is written and distributed.

Could there be more material published in aquatics for individuals with disabilities? Of course! Wouldn't that be great? But, if no one writes, there will be nothing published. The categories of publications are numerous. The publications cited in this analysis are only examples of possibilities. The topic of aquatics for individuals with disabilities needs to maintain its stature as a viable field of professional endeavor. More importantly, professionals in the field must take responsibility for continually defining and advancing the field. The next decade must show the growth in publication sorely missing from the immediately past decade.

### **Conclusions**

The variety in the publication of material on aquatics for individuals with disabilities was found to be great. Variety existed not only in the category of publication, but also in academic sophistication. No pattern or trend was discernable. While I had hoped that the frequency of publication would increase linearly over the two-decade span, this was not shown. The fluctuations in number were great and non-linear.

Because the very nature of aquatics for individuals with disabilities too often allows professional practice and anecdotal reports to seem as important as research studies and theoretical analyses, no attempt was made to judge the value of the quality of the articles in analysis. There was also no attempt made to judge the academic quality of periodicals. One does not need to have an academic degree to work in aquatics with individuals with disabilities. Therefore, it was felt that all levels of publication were viable as information sources for professionals in the

field. It would be up to the reader to further evaluate the credibility of the material presented and the credentials of the author.

**Reference**

Grosse, S. (2010). *Grosse Adapted Aquatics Database: Ten-Year Addendum*. Milwaukee, WI: Aquatic Consulting & Education Resource Services.

**Appendix**

## List of Periodicals and Number of Articles by Category

<i>Category</i>	<i>Articles</i>	
	<i>2000-2009</i>	<i>2010-2019</i>
<b>Adapted Physical Education/Therapeutic Recreation</b>	<b>37</b>	<b>13</b>
Active Living		
Adapted Physical Activity Quarterly (APAQ)*		
American Journal of Recreation Therapy		
European Journal of Adapted Physical Activity and Sport		
In Motion		
Multi-Cultural Learning and Teaching		
New Mobility		
Palaestra*		
Sports n' Spokes		
Therapeutic Recreation Journal		
<b>Aquatics</b>	<b>23</b>	<b>24</b>
Aqua Line		
Aquatics International		
Interconnections Quarterly Journal		
International Journal of Aquatic Research and Education (IJARE)*		
<b>Aquatic Exercise</b>	<b>41</b>	<b>0</b>
AKWA (Aquatic Exercise Association)		
Aquatic Fitness Research Journal		
<b>Aquatic Therapy</b>	<b>19</b>	<b>1</b>
Aquatic Therapy Journal (ATJ)		
Journal of Aquatic Physical Therapy*		
<b>Disability Specific</b>	<b>19</b>	<b>12</b>
ACP Journal Club		
Activities, Adaptions, and Aging		
Arthritis Care and Research		
Arthritis Rheumatology		
Autism		
Brain Injury		
British Journal of Visual Impairment		
Clinical and Experimental Dermatology		
Developmental Disabilities		
Disability and Health Journal		
Exceptional Parent		
Haemophilia		
Inside MS		
International Journal of Disability, Development and Education		

Journal of Intellectual Disabilities Journal of Laryngology and Otology Neurorehabilitation Otolaryngology – Head and Neck Surgery Rheumatology International Supportive Care in Cancer Specijaina Educkacija i rehabilitacija Supportive Care in Cancer Support Oncology		
<b>Education</b>	<b>3</b>	<b>5</b>
Breaking Ground European Journal of Special Needs Education International Journal of Early Childhood Education Journal Pedagogy Journal of ISCAR Revista de Pedagogie Times Education Supplement Topics in Early Chihldhood		
<b>General Information</b>	<b>5</b>	<b>3</b>
Injury Prevention Newsweek Journal of Environmental Research and Public Health Journal of Korea Convergence Society Kiplingers Personal Finance WeMedia Magazine		
<b>Medicine</b>	<b>12</b>	<b>5</b>
Acta Kinesiologica American Journal of Public Health Clinical Diabetes Clinical Investigative Medicine Clinical Reviews in Physical Rehabilitation Medicine Developmental Medicine and Child Neurology Health Care for Women International Internal Medical News JAMA Journal of Biomedicine, Science and Engineering Journal of Developmental Neurorehabilitation Journal of Nursing Journal pf Pediatric Health Care		
<b>Physical Education and Recreation</b>	<b>20</b>	<b>11</b>
Gymnasium		

<p>Inquiries in Physical Education and Sport                  Journal of Physical Education and Recreation (JOPERD)*                  Journal of the International Council for HPER-SD                  Kansas AHPERD Journal                  Managing Leisure                  Ovidus University Annals: Physical Education Series                  Parks and Recreation                  Parks and Recreation Business                  Research Quarterly for Exercise and Sport                  Research Quarterly for Physical Activity and Sport                  Strategies                  Teaching Elementary Physical Education                  Virginia AHPERD Journal</p>		
<p><b>Rehabilitation</b></p> <p>Clinical Rehabilitation                  Disability and Rehab*                  Journal of Injury, Function and Rehabilitation                  Journal of the Society of Biomechanisms                  Orthopedic Physical Therapy Clinics of North America                  Pediatric Physical Therapy                  Physical and Occupational Therapy in Pediatrics                  Physical Therapy Case Report                  Rehab Management*                  Rehabilitation R &amp; D Reports</p>	<b>38</b>	<b>4</b>
<p><b>Sport Science</b></p> <p>Athletic Therapy Today                  Athletic Training Today                  British Journal of sports Medicine                  Central European Journal of Sport Science and Medicine                  Clinical Kinesiology                  Education and Sport                  European Journal of Applied Physiology and Occupational Physiology                  Human Movement and Science                  Journal of Applied Biomechanics                  Journal of Athletic Training                  Journal of Exercise Nutrition and Biochemistry                  Journal of Japanese Society of Sciences in Swimming and Water                  Exercise                  Journal of Physiological Anthropology                  Journal of Shenyang Sport University</p>	<b>15</b>	<b>21</b>

Journal of Strength and Conditioning Research  
KTU Mechanics  
Malaysia Journal of Sport Science  
Medicine and Science in Sport and Exercise  
Personal Fitness Professional  
Polish Journal of sport and Tourism  
Procidia – Social and Behavioral Sciences  
Revista Brasileira de Medicina do Esports  
Research Quarterly for Exercise and Sport  
Science and Sports  
Serbian Journal of sport Sciences  
Sport a Kvalita Zivota  
Sport and Society  
Sporting Traditions  
Sports Medicine Journal

\* Indicates publications that have had articles in both decades