

**RESEARCH TRENDS IN ADAPTED PHYSICAL ACTIVITY ON THE BASE OF APAO
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The present study attempted to identify the research trends in Adapted Physical Activity-APA. Documentary analysis was used to evaluate 99 research studies in APAQ from 2006 to 2010. The majority of publications examined psychosocial issues (29.29%), measurement/ assessment/ classification (20.20%), exercise science/ physical activity (14.14%), motor behavior, biomechanics (8.08%) and disability sports (21.21%). Samples of individuals with physical disabilities (17.89%), different disability categories (14.73%) and mental retardation/ intellectual disability (12.63%) were reported more often. For the quantitative vs qualitative distinction, 74 studies were classified as quantitative while 16 studies were qualitative. Validity and reliability reports appeared in 82 studies, while the majority of the sampling methods were purposive (21 studies), recruited (20 studies) and convenience (17 studies). With respect to theories the self-efficacy and self-determination were the most commonly reported. Overall, there is a trend for using theory to examine specific samples more in depth, through qualitative research, and a lower tendency to report analyses with sophisticated statistical software, randomized samples and generalization of findings. Academic scholars and researchers may consider the above conclusions when consulting with their graduate students and planning their future research endeavors in the APA field

Key words: Adapted Physical Activity - APA, research trends

INTRODUCTION

According to the Web, trend is considered as the general course, prevailing tendency or general direction. In turn, research may be considered as the systematic inquiry or investigation into a subject in order to discover or revise facts, theories, applications, etc (Google: <http://dictionary.reference.com>). According to Sherrill (1997), research may be perceived also as 'means by which a body of knowledge is developed' (p. 2). Research trends therefore were defined, for the purposes of the present study, as the tendency of systematic inquiry in the field of adapted physical activity (APA) providing the general direction for scientists planning their future research endeavors.

Adapted Physical Activity (APA) is perceived as a cross disciplinary body of knowledge directed towards identification and solution of psychomotor problems throughout the life span. Further, it is a service delivery profession and an academic field of study that supports an attitude of acceptance of individual differences, advocates access to active lifestyles and sports and promotes innovation and cooperative service delivery programs and empowerment systems (Hutzler & Sherrill, 2007; Reid & Stanish, 2003; IFAPA, 2004). The European Association on Research into the APA field (EARAPA) defined APA in terms of movement experiences and applications directed towards the needs,

interests and abilities of individuals with impairments, disabilities and handicaps (Doll-Tepner, 1996, p. 598). According to Sherrill (2004), APA refers to the integration of information from many disciplines in the creation of a distinct, unique body of knowledge focusing on adaptation, individual differences and physical activity. Information from different academic disciplines, such as kinesiology, exercise and sport science, recreation (leisure studies), social studies, special education, general education, counseling, medicine, law, physical and occupational therapy are therefore shaping the knowledge base of APA (Sherrill, 2004).

The importance of promoting research in the scientific field of APA stems mainly from the worldwide rising population of individuals with disabilities. Sherrill (2004) for example stated that approximately 45 million of individuals experience some type of disability in the USA (16% of the total population). According to the Federal Public LAW (105-17) in USA, the 13 legally recognized disabilities are: autism, deaf-blindness, hearing impairment, mental retardation, multiple disabilities, orthopedic impairments, other health impairments, serious emotional disturbance, specific learning disability, speech or language impairment, traumatic brain injury, and visual impairment including blindness. Of this 45 million with disabilities in USA, 10% are children and adolescents, 30% are young and middle aged adults while over 50% are individuals above the age of 65. Further, approximately 10-12% of individuals experience disabilities from birth to the age of 22 years old, and may benefit from special education services including APA.

The major concern in the present study was to identify the sources where the major body of research in the APA field may be found. Porretta and Sherrill (2005) stated that *Adapted Physical Activity Quarterly* (APAQ) and *Palaestra* are two well-known scientific journals exclusively publicizing research in the APA field. The above researchers stated that APA scholars publish in a variety of different journals while the primary journal in the field is APAQ. The same direction was followed by

Sherrill (1999) and Reid and Prupas (1998) who evaluated publications in the APAQ, while Reid and Stanish (2003) reviewed studies from APAQ and *Clinical Kinesiology* as representative in the APA field. Porretta (2004) stated that APAQ serves the academic community internationally with a diversified editorial board allowing a wider 'understanding of adapted physical activity from a variety of cultural contexts' (p. 1 – 3). Finally, Hutzler and Sherrill (2007) stated that since 1994, the International Federation of APA has selected APAQ as the main international journal increasing the knowledge base of the field through research. In line with the direction provided above from distinguished scholars (Porretta & Sherrill, 2005; Reid & Broadhead, 1995; Reid & Prupas, 1998; Sherrill & O'Connor, 1999; Sherrill, 1999), we assumed that APAQ is the main source of research in our field, and as such it was selected to evaluate research trends in APA.

Porretta and Sherrill (2005) used a documentary approach to examine APAQ publications during the journal's second decade, from 1994 to 2003. The researchers found that the majority of researchers came from institutions within the USA and Canada, and the examined topics: a) were relevant to psychosocial issues, motor behavior, exercise science/ physical activity and inclusion/ programming, and b) used a variety of samples such as generic, individuals with mental retardation, physical disabilities and multiple samples (Porretta & Sherrill, 2005). Reid and Broadhead (1995) examined the APAQ publications during the journal's first decade, from 1984 to 1993. In general, the researchers found similar figures with respect to country authorship, the topics examined and disability categories, with generic samples used more often compared to those reported by Porretta and Sherrill (Reid & Broadhead, 1995). Sherrill and O'Connor (1999) examined through documentary analysis the APAQ research articles during 1997 and 1998. The researchers provided general guidelines for the improvement of the quality of research in the scientific area of APA, through identification

of theory used, sample design, description of participants, validity and reliability reports, effect size report, etc. (Sherrill & O'Connor, 1999). Sherrill (1999) examined the APAQ literature in an attempt to describe the new era of research in disability sport and classification. The researcher stated that 35% of published research focused on disability sports and concluded that 'in selecting topics for future research, we should be cognizant of their underlying theories and how they fit together to form the whole that makes up our knowledge base' (Sherrill, 1999; p. 212). Finally, Reid and Prupas (1998) identified through the Sport Discus that the research areas attracting the most attention from 1986 to 1996, were: a) similarities and differences between athletes with and without disabilities, b) psychological and sociological aspects of disability sports and c) technological advancements in disability sports.

The historic importance of APAQ for future generations in the APA field was also presented in an editorial by Porretta (2004). The researcher stated that the quality of the research published enhanced the tenure process of professionals and facilitated their mentoring efforts to graduate students (Porretta, 2004). Faculty members in the field therefore need to support their students to develop research competencies (Porretta, Surburg & Jansma, 2002), prepare them to get leadership roles in research and teaching (Ellery & Stewart, 2000) and serve at institutions of higher education (Zhang, Joseph & Horvat, 1999). Zhang et al. (1999) reported that APA in higher education is a career with increased demand but qualified personnel in higher institutions is missing. Ellery and Stewart (2000) evaluated Master's and Doctoral level programs receiving federal funding in the USA and found, among others, that they incorporated a curriculum from different academic disciplines related to APA, with a variety of graduation requirements, such as thesis, dissertation, research projects and comprehensive exams. Porretta et al. (2002) reported that the research competencies of doctoral graduates improved significantly across two decades (1980-1989 to 1990-1999).

The researchers stated that research in the APA field may encourage 'professors to more fully address research in their doctoral programs by emphasizing such topics as research issues and trends' (Porretta et al., 2002, p. 425). However, with respect to research trends in the APA field, only the study of Zhang, deLisle and Chen (2006) was found reviewing abstracts from the AAHPERD conventions between 1968 and 2004. The researchers stated that although the APAQ articles were often used to evaluate the body of knowledge in the APA field, the journal was existent only since 1984. Zhang et al. (2006) used the linear regression statistical approach and found that descriptive studies with multiple authors, using small sample sizes to examine program effect and psychosocial issues for individuals with learning and behavioral disorders represented a general research trend in the APA field (Zhang et al., 2006). The study of Zhang et al. (2006) however is limited due to the absence of complete research articles reviewed. It is possible that a number of the abstracts reviewed may have not been accepted for publication due to inability to meet certain criteria presented by editors. Thus, the need of faculty members to examine well-known scientific journals publicizing exclusively research in APA (e.g. APAQ) in order to detect the research trends and guide their students in their research efforts still remains intact.

Taking into consideration therefore the academic demands faced by faculty members nowadays and the previous studies examining the APAQ content (Reid & Prupas, 1998; Reid & Stanish, 2003; Sherrill, 1999; Sherrill & O'Connor, 1999; Porretta & Sherrill, 2005), it was decided to examine the recent APAQ publications in an attempt to describe the future trend in the APA research field. The suggestions of Shepherd (1999) were followed since the 'major advances in APA over the past years have resulted from a vigorous application of the scientific method, and this approach holds the greatest promise as we move into the new millennium' (p. 342).

METHOD

Procedure

Personal accessibility over the APAQ publications was available from 2006 to 2010. Twenty APAQ volumes were examined, with a total of 99 studies. The above studies may be found in Appendix 1.

Accordingly, the 99 studies were evaluated in an attempt to define research trends in APA. Following the example of previous researchers, the documentary analysis followed evaluated studies according to the scientific area examined (Porretta & Sherrill, 2005), disability sports (Sherrill, 1999; Porretta & Sherrill, 2005), disability (Reid & Broadhead, 1995; Porretta & Sherrill, 2005), quantitative vs qualitative method used (Sherrill & O'Connor, 1999; Bouffard, Streat & Davis, 1998), country authorship (Porretta & Sherrill, 2005), sampling design (Sherrill & O'Connor, 1999), validity and reliability reports (Yun & Ulrich, 2002), software for statistical analysis and theories used (Sherrill, 1997, 1999; Reid & Broadhead, 1995). In case an article was assigned in two or more scientific areas, it was assigned to the area with the most significant contribution (Porretta & Sherrill, 2005). An example is the study of Lloyd, Burghardt, Ulrich and Angulo-Barroso (2010) examining physical activity and walking onset in infants with Down syndrome. With respect to disability, this study was classified under the Down syndrome category and not under at-risk infant toddlers.

Concerning the scientific area, the attempt was to retain the definitions of Porretta and Sherrill (2005) which may be found in Appendix 2. The disabilities identified may be found in Appendix 3. For the quantitative vs qualitative distinction the definitions of Langdridge (2004) were used (Appendix 4), while country authorship was determined by 'the university/ agency affiliation and mailing address at time of publication' (Porretta & Sherrill, 2005, p. 126). In the present study, authors were counted additionally in case they had published more than once in APAQ from 2006 to 2010. Further, the research sampling design, the software used for statistical analysis and validity and reliability reports

were counted to strengthen the evaluation of research studies in an attempt to detect the research trends in APA (Sherrill & O'Connor, 1999, Sutlive & Ulrich, 1998, Yun & Ulrich, 2002).

Finally, the present study evaluated the theories used in the APA literature, from 2006 to 2010. According to Slife and Williams (1995) theories may be perceived as formalized ideas applied to explain different phenomena. Sherrill (1999) stated that theories constitute a conceptual framework in which inter related knowledge is synthesized in an attempt to describe, or even predict the phenomena we examine. Further, Sherrill (1999) stated that in 'selecting topics for future research, we should be cognizant of their underlying theories and how they fit together to form the whole that makes up our knowledge base' (p. 212). Following the above suggestions, it appeared that the evaluation of theories publicized in APAQ were of significant merit for description of the respective research trends. For the purposes of the present study, we counted the frequency and content of theories specifically presented into the 99 APAQ publications, which in turn were either incorporated as separate subsections or specifically addressed within the introduction.

RESULTS

The 99 studies were evaluated according to the respective area examined, disability, quantitative vs. qualitative method used, country authorship, sampling design, validity and reliability reports, software for statistical analysis and theories used. Reliability checking was conducted in 30 studies, with three doctorate students in the APA field. The percentage of agreement obtained was above 80% (Thomas & Nelson, 2001) and the results are presented accordingly.

Concerning the scientific areas, the majority of publications from 2006 to 2010 examined psychosocial issues (29 studies, 29.29%), measurement/ assessment/ classification (20 studies, 20.20%), exercise science/ physical activity (14 studies, 14.14%), motor behavior (11 studies, 11.11%)

and biomechanics (8 studies, 8.08%). The overall

findings are presented in table 1.

Table 1 - The Scientific Areas Identified in APA

Scientific Focus	Frequency	
Psychosocial issues	29	(29.29%)
Motor behavior	11	(11.11%)
Exercise science/ physical activity	14	(14.14%)
Inclusion/ programming	8	(8.08%)
Measurement/ assessment/ classification	20	(20.20%)
Research issues	1	(1.01%)
Professional preparation/ issues	1	(1.01%)
Biomechanics	8	(8.08%)
Pedagogy	2	(2.02%)
Other	4	(4.04%)
History	1	(1.01%)
Total	99	(100%)

A total of 21 studies (21.21%) examined disability sports. The respective scientific area of disability sports was relevant to psychosocial issues (12 studies, 57.14%), biomechanics (3 studies, 14.29%), measurement/ assessment/ classification (2 studies, 9.5%), motor behavior (2 studies, 9.5%), inclusion (1 study, 4.76%) and exercise science (1 study, 4.76%). 71% of the sport related studies recruited their sample from sport organizations offering recreation programs, while high performance athletes participating in the Paralympics were recruited in the biomechanics.

With respect to the disabilities examined, the majority evaluated samples of individuals with physical disabilities (17 studies, 17.89%), individuals from different disability categories (14 studies, 14.73%) and mental retardation/ intellectual disability (12 studies, 12.63%). The generic studies were next, with samples of e.g. parents, students without disabilities (11 studies, 11.57%) etc. while no studies were published examining individuals with hearing impairment and at-risk infant toddlers. The above findings are presented in table 2.

Table 2 - Disabilities Identified in the APA Literature

Disability	Frequency	
Generic	11	(11.57%)
Intellectual disability (Mental Retardation)	12	(12.63%)
Multiple sample	14	(14.73%)
Physical disability	17	(17.89%)
DCD/ awkward	7	(7.37%)
Down syndrome	5	(5.26%)
Neurological impairment	5	(5.26%)
Hearing impairment		

Medical conditions	3	(3.16%)
Emotional/ behavioral disorders	6	(6.32%)
Visual impairment	3	(3.16%)
Learning disabilities	1	(1.05%)
Autism	6	(6.32%)
Multiple disabilities	3	(3.16%)
Gerontology	2	(2.11%)
At-risk infant toddlers		
Total	95	(100%)

For the quantitative vs. qualitative distinction, 74 studies were evaluated as quantitative, 16 studies were qualitative and 3 studies used mixed quantitative and qualitative methods. Further, 6 review studies were identified which were not counted as either quantitative or qualitative.

Table 3- Country Authorship

Country authorship - Frequency	
Australia	7 studies
Belgium	6 studies
Brazil	1 study
Canada	22 studies
England	2 studies
Finland	2 studies
France	3 studies
Germany	1 study
Greece	1 study
Hong Kong	3 studies
Israel	3 studies
Latvia	1 study
Netherlands	6 studies
New Zealand	1 study
Norway	2 studies
Poland	2 studies
Puerto Rico	1 study
Portugal	1 study
Spain	2 studies
Taiwan	2 study
USA	33 studies

Country authorship is listed alphabetically and was determined by the affiliation and mailing address at time of publication

Researchers from 22 separate countries appeared in the APAQ from 2006 to 2010. Researchers from the USA appeared in 33 studies, with colleagues from Canada (22 studies), Australia (7 studies), Belgium (6 studies) and Netherlands (6 studies) following. The respective data from country authorship may be found in table 3.

The specific sampling design used was introduced in 73 studies. The majority of the above studies incorporated purposive (21 studies), recruited (20 studies) and convenience (17 studies) sampling selection methods. In turn, volunteer sampling (6 studies), case studies (5 studies) and random selection/ assignment (2 studies) came next. Representative sampling selection and invited to participate methods of sampling were used in one study each.

Accordingly, validity and reliability reports appeared in 82 studies. A variety of methods were used to report the validity and reliability evidence, and as such, it was not feasible to summarize the respective findings, which are presented in table 4. Interestingly, credibility was the method appearing most often, in 14 separate studies, and was evident in studies using qualitative methods of research.

Statistical analyses used mainly an SPSS version (24 studies) with SPSS-12 more often reported (6 studies). Interestingly, the SPSS-17 was the latest version reported in one study only, although latest SPSS versions are nowadays available for researchers and statisticians to use (e.g. SPSS-19). The LISREL and PRELIS were reported in 8 studies for conducting Structural Equation

Modeling (SEM) and Confirmatory Factor Analysis (CFA). Further, the LISREL 8.54 was reported in 2 studies for reporting CFA results as well. Other statistical software used was the

Strata 9.0 (1 study), the SAS (1 study), the SES (1 study) and the Statistica 6.0 (1 study).

Table 4 - Validity and Reliability Reports

Method	Frequency
Quantitative research method	
Reliability	
Internal consistency	12 studies
Intraclass coefficients	8 studies
Internal consistency – Inter rater reliability	5 studies
Internal consistency – test retest	7 studies
Reliability – accuracy	7 studies
Inter observer agreement	12 studies
Validity	
Construct validity	8 studies
Content validity	6 studies
Translation validity	2 studies
Concurrent validity	1 study
Reliability and validity	
Test retest – Intraclass – Concurrent validity	1 study
Test retest reliability – Convergent validity	3 studies
Qualitative research method	
Credibility	14 studies
Trustworthiness	8 studies
Transferability	1 study
Dependability	5 studies
Confirmability	4 studies
Authenticity	2 studies
Triangulation	2 studies

With respect to the theories used, a total of 57 studies (57.57%) indicated the specific theory guiding the respective research study. The social cognitive theory of self-efficacy (Bandura, 1997) and the self-determination theory (Wehmeyer, 1998),

(Wehmeyer & Gager, 2003; Deci & Ryan, 1985, 1991) were the most commonly used. The above results are summarized in table 5.

Table 5 – Theories.

Researchers	Theory	Citation
Martin (2006)	Social cognitive theory	Bandura (1997)
Kosma et al (2006)	Sport commitment model	Scanlan et al (1993)
Driver (2006)	Transtheoretical model	Burbank & Riebe (2002)
Lloyd, Reid & Bouffard (2006)	Russell's conceptualization of affect	Russell (1980)
Tsalavoutas & Reid (2006)	Social cognitive model of regulation (2000)	Shunk & Zimmerman
Kodish et al(2006)	Self determination theory	Deci (1980)
Giacobbi et al (2006)	Planned behavior theory	Ajzen (1985 1991)
Driver (2006)	Five-factor model of personality	McAdams (1997)
Goodwn et al (2006)	Self-efficacy theory	Bandura (1986)
Sorensen & Kahrs (2006)	Mediational model of global self-worth	Harter (1987)
Grenier (2006)	Self determination theory	Deci (1980)
Dunn & Dunn (2006)	Theory of integration	Berry (1996)
Tripp & Rizzo (2006)	Social constructionism	Gergen (1994)
Hutzler & Sherrill (2007)	Achievement goal theory	Roberts (1992)
An & Goodwin (2007)	Planned Behavior theory	Ajzen (1991)
Arbour et al (2007)	Social constructionism	Denzin & Lincoln (2003)
Driver (2007)	Disablement model	Peters (1996)
Maiano et al (2007)	Social identity theory	Turner (1984)
Hutzler (2007)	Multidimensional social influence	Chogahara (1999)
Perreault & Vallerand (2007)	Multidimensional self-concept	Shavelson et al (1976)
Moola et al (2007)	Systematic ecological model in APA	Hutzler (2007)
Chrysagis et al (2007)	Self determination theory	Deci & Ryan (1985, 1991)
Motl et al (2007)	Social cognitive learning theory	Bandura, 1997
Hodge et al (2007)	Neuropsychological model	Sage (1977)
	Generalizability theory	Morrow (1989)
	Feminism	Olesen (2000)
	Critical race theory	Ladson-Billings (1998)
Standal & Jespersen (2008)	Situated learning theory	Wenger (1998)
Moola et al (2008)	Social cognitive theory	Bandura (1977)
Klavina & Block (2008)	Contact theory	Allport (1954, 1979)
Martin (2008)	Social cognitive theory	Bandura (1977)
Driver (2008)	Self-worth model	Harter (1987)
Pan (2008)	Self-determination	Wehmeyer & Gamer (2003); Deci & Ryan (1985,1991)
Collumna et al (2008)	Ecological model of human development	Bronfenbrenner (1977)

Table 5 – Theories.

Bryant & Curtner-Smith (2008)	Sociological perspective	Bandura (1986)
Simons et al (2008)	Fundamental movement skills	Burton & Miller (1998)
Giacobbi et al (2008)	Grounded theory	Charmaz (2000,2002)
Sousa et al (2009)	Conception of the lived body	Merleau-Ponty (1996)
Mazzoni et al (2009)	Hierarchical model of self-esteem and self efficacy	Fox (2000)
Kasser (2009)	Self-efficacy theory	Bandura (1977, 1986)
D'Hondt et al (2009)	Activity-deficit hypothesis	Wall (2004), Bouffard et al (1996)
Samalot-Rivera & Poretta (2009)	Social learning theory	Bandura (1997)
Tsai & Fung (2009)	Contact theory	Allport (1954)
Goodwin et al (2009)	Social ecological approach	Sallis & Owen (1997)
Rossow-Kimball & Goodwin (2009)	Theory of psychosocial Sense of community	McMillan & Chivas (1986)
Harvey et al (2009)	Self-determination theory	Wehmeyer & Sands (1966)
	The knowledge-based approach	Wall et al (1985)
	The inhibitory model of executive function	Barkley (1997)
Seymour et al (2009)	Dyadic friendship Relationship	Weiss & Stuntz (2004)
Kim & Yun (2010)	Generalizability Theory	Morrow (1989)
Obrusnikova et al (2010)	Planned Behavior theory	Shavelson et al (1989)
Lloyd et al (2010)	Neuronal Group selection theory	Ajzen (1991)
Oh et al (2010)	A cognitive (attribution)-emotion-action model of helping behavior	Edelman (1987)
Shapiro & Martin (2010)	Multidimensional self-concept model	Weine (1980)
Oh & Kozub (2010)	Self-efficacy theory	Marsh et al (1994)
Todd et al (2010)	Self-determination theory	Bandura (1997)
Spencer-Cavaliere (2010)	Inclusion model	Wehmeyer (1998)
Getchell et al (2010)	Perception-action couple	Sternad (2000)
Verret et al (2010)	Four executive neuropsychological functions	Barkley (1997)
Mauerberg-deCastro et al (2010)	Perception-action approach	Shumway-Cook & Woollacott (1985)
Biesen et al (2010)	Core determinants of sport proficiency	Williams & Reilly (2000)
Button et al (2010)	Constraints-led approach	Davis et al (2003)

DISCUSSION

The present study examined the research trends in APA. As such, and following the example of previous scientific reports (Porretta & Sherrill, 2005; Reid & Broadhead, 1995; Sherrill, 1997), the 99 APAQ publications from 2006 to 2010 were selected to serve the present research purpose.

Psychosocial issues mainly gathered the scientific attention, followed by measurement/assessment/ classification, exercise science, motor behavior and biomechanics. Individuals with physical disabilities and from different disability categories were the most common examined, followed by individuals with mental retardation/ ID and developmental coordination disorder – DCD, individuals with autism and emotional/behavioral disorders. The generic group, which incorporates individuals without disabilities, appeared in several studies also (11 studies). Further, the quantitative research methods used were evident more often (74 studies), while several studies reported qualitative (16 studies) and mixed (3 studies) methods of research. The USA was most commonly seen as country authorship, followed by Canada, Australia, Belgium and the Netherlands. The common sampling methods used were either purposive, recruited and convenience. The SPSS was used often for data analysis (24 studies), while validity and reliability reports were evident in 82 studies. Fourteen qualitative studies used the methods of credibility to report the validity evidence and five studies used dependability to report the reliability evidence.

With respect to the psychosocial issues, a variety of studies examined e.g. the psychosocial determinants of sports (Dunn & Dunn, 2006; Perreault & Vallerand, 2007; Harada & Siperstein, 2009; Shapiro & Martin, 2010), leisure experience (Rossow- Kimball & Goodwin, 2009), quality of life (Giacobbi et al., 2008), parental expectations (Goodwin et al., 2006; An & Goodwin, 2007; Columna et al., 2008), etc. The measurement/assessment /classification area included topics relative to validity (Van Waelvelde et al., 2007; Loh et al., 2009) and reliability (Driver, 2007; Motl et al., 2007) testing, sport

classification issues for individuals with disabilities (Beets et al., 2007; Molik et al., 2008), etc. The area of exercise science examined the physical activity levels of adults (Lahtinen et al., 2007; Hechler et al., 2008), adolescents and children during physical education and recess (Pan, 2008; Sit et al., 2008). Motor behavior studies examined motor development in children (D' Hondt et al., 2009), performance (Passmore et al., 2007), motor learning (Martin, 2008) and motor control of elite athletes (Van Biesen et al., 2010). The biomechanics area examined topics such as kinetic movement analysis (Ray et al., 2007; Reina et al., 2007) and propulsion techniques for enhancing performance of elite Paralympic athletes (Frossard et al., 2007; Costa et al., 2009).

Comparison of the present figures with those reported by Porretta and Sherrill (2005) revealed the following with respect to the scientific area examined: Inclusion (8.08%) and professional preparation (1.01%) research were less than the 13.38% and 4.46% respective figures of Porretta and Sherrill (2005). In turn, the 8.08% in biomechanics was higher compared to the respective 2.97% during the last two decades. Overall, it appears that editors interest in publicizing research from the biomechanics field has increased lately, while there is a slight drop for inclusion, exercise science, motor behavior and professional preparation. The psychosocial issues and measurement draw the highest research attention and this trend remains invariant across time.

Disability sports were addressed in 21.21% of the studies and this finding is consistent with Porretta and Sherrill (2005) who identified a respective figure of 24%. With respect to the disability sport scientific area, the psychosocial issues were the most prominent in the present study, followed by the biomechanics, motor behavior, measurement/assessment/ classification, inclusion and exercise science/ physical activity. The psychosocial issues are consistent with the 50.77% figure of Porretta and Sherrill (2005) who, in turn, reported that exercise science/ physical activity as being the second most

frequent (23.08%), while biomechanics were reflected in 7.69% of the disability sport studies. Overall, there is a tendency to retain psychosocial as the most prominent issue in disability sports, with a decrement in exercise science and increment in the biomechanics field.

With reference to the population examined, no publications were found with at-risk infant toddlers and individuals with hearing impairment during the last five years. Individuals with autism and emotional/behavioral disorders were more often examined than the 0.37% and 0.74% figures reported by Porretta and Sherrill (2005). The DCD group of children retained a similar scientific interest (7.37% during 2006 - 2010 vs. 9.29% during the last two decades). Further, physical disabilities (17.89%), multiple sample (14.73%), MR/ID (12.63%) and generic studies (11.57%) attracted the highest research attention lately. Porretta and Sherrill (2005) reported a 13.75% for physical disabilities, 11.90 % for multiple sample, 30.11% for generic research and 15.24% for individuals with mental retardation (MR/ ID). Overall, physical disabilities, multiple sample and mental retardation still accumulate a wide research attention, while there is a tendency for a decrease in the number of research studies in the generic field.

The reported authorship from the USA (32.04%) was still the dominant figure, although smaller than the 52.34% reported by Porretta and Sherrill (2005). The present and past figures from Canada (21.36% vs 14.48%), Australia (6.80% vs 4.45%), and Netherlands (5.83% vs 3.79%) remained similar, while there was a slight increase in the studies from Belgium (5.83% vs 3.56%) and decrease in the studies from England (1.94% vs 6.46%). Further, no publications were reported from Ireland, Sweden, Singapore, Republic of Korea, China and Jordan (Porretta & Sherrill, 2005), while new authorship was reported from Brazil, Latvia, Botswana, Poland and Puerto Rico. Overall, it appears that APAQ editors are open to international publications from a variety of countries. However, authorship from North America (USA and

Canada) still approach almost 54% of the total publications. The absence of research studies reported from other countries may be explained from the fact that international scholars in the APA field also attend other journals besides APAQ to publicize their work. Overall, the above findings are partially in agreement with Porretta (2004) who stated that a wide number of international colleagues appeared in APAQ between 1994 and 2003, representing 21 countries. Sherrill (1997) supported that notion and stated that 'the strength of APAQ lies in the involvement and support of as many scholars as possible. We need to perceive ourselves as a scholarly community responsible for creating a strong knowledge base to drive practices in the field (p. 6).

The dominant sampling design (purposive, recruited and convenience) accounted for 62.37% of the sampling methods used. In turn, 5 case studies were found, accounting for a 5.37%. Sherrill and O'Connor (1999) reported random, purposive, volunteer, systematic and convenience as the more frequently sampling methods used. In the present study however, random selection/ assignment was reported for two studies only. The above findings are supported by Kudlacek (2012), president of the European Federation of Adapted Physical Activity, who stated that knowledge gained from case studies may guide service delivery in the APA field. The tendency to examine specific samples and record more in depth findings is evident in the May 2012 EUCAPA conference which is going to focus on research and case studies with respect to the inclusion and empowerment of individuals with disabilities.

The studies using either qualitative or mixed quantitative and qualitative research methods represented a summarized figure of 19.19%. The 19.19% is higher compared to the 5.26% reported by Sherrill and O'Connor (1999) and may be indicative for a shift towards more qualitative research in the APA field.

The SPSS was the statistical software more often reported for statistical analysis. Further, a variety of reliability and validity evidence

were reported for a total of 82 studies, following the suggestions of Sherrill and O'Connor (1999) and Yun and Ulrich (2002). The above researchers have mainly presented methods for sample specific validity and reliability evidence in quantitative research (construct validity, concurrent validity, internal consistency, inter observer agreement). Further, the 2006 - 2010 qualitative studies followed the suggestions of Yun and Ulrich (2002) but reported different and combined methods for providing validity and reliability evidence, such as trustworthiness (8 studies), credibility (14 studies) and triangulation (2 studies). Overall, the general guidelines of Yun and Ulrich (2002) and other researchers in the field (e.g. Sherrill & O'Connor, 1999) still prevail since APA researchers need to provide validity and reliability evidence for their findings. The validity and reliability reports however may vary, according to the quantitative or qualitative method used to test the research hypothesis.

A total of 57 publications reported the theory used to guide research. This figure is in agreement with scholars in the field who suggested that APA is strongly driven by theory (Sherrill, 1997; Bouffard & Watkinson, 1998; Sherrill, 1999; Sherrill & O'Connor, 1999; Reid & Stanish, 2003; Hutzler & Sherrill, 2007). According to Slife and Williams (1995), theories may be perceived as formalized ideas, such as understandings, observations, assumptions, etc. applied, in an effort to understand a variety of phenomena. The theories more often emerging in APAQ were the self-efficacy theory (Bandura, 1977, 1997) and the self-determination theory (Deci & Ryan, 1985, 1991; Wehmeyer, 1998; Wehmeyer & Sands, 1996; Wehmeyer & Gamer, 2003). In brief, Bandura (1997) stated that self-efficacy is the individual's belief of his/ her personal capacity to be successful. High levels of self-efficacy result in higher motivation and desire to excel. Individuals with assurance of their personal abilities tend to focus on challenging goals and persist when facing difficulties. Individuals, however, with lower self-efficacy, avoid challenging goals and withdraw easily when facing difficulties

(Bandura, 1997). In turn, self-determination (Deci & Ryan, 1985, 1991) is a life long developmental process. According to Wehmeyer and Sands (1996), self-determination is leading individuals 'to act as the primary causal agent in one's life, and to make choices and decisions regarding one's quality of life, free from undue external influence or interference' (p. 24). Autonomy, self-regulated behavior, psychological empowerment and self-realization are the four main characteristics which must be met for an individual to be self-determined. Finally, the 2006 - 2010 APAQ publications revealed a unique research study introducing an innovative theory in the APA field (Hutzler, 2007). Specifically, Hutzler (2007) presented a systematic ecological model for adapting physical activities. This model was developed as a theoretical frame to guide researchers and practitioners in the APA field and was not borrowed from allied disciplines (such as psychology and sociology).

The added tendency for more qualitative research supported by theory and a lower tendency to report analyses with sophisticated statistical software may be indicative for a shift of APA research towards examining specific samples, an attempt to get more qualitative and in depth understanding, without a general tendency to examine randomized samples and generalize the findings. The above are in accordance to Sherrill (1997) who stated that as faculty members continue to 'confer master's and doctoral degrees in adapted physical activity, it is essential to examine the epistemology of adapted physical activity and to strengthen the conceptual framework of our discipline' (p. 3). Porretta (2004) supported that notion and stated that the APA theoretical knowledge base must be further enriched, developed and refined through ongoing research of high quality. Overall, it appears that the academic personnel working in higher institutions may follow the above suggestions by seeking quality research during the upcoming years and follow the theoretical guidelines presented by scholars in the field. Finally, although not presented as a separate research hypothesis, there was a further

attempt to evaluate the representativeness of male and female researchers in the APAQ, following the example of Sherrill and O'Connor (1999). The only criterion used was the researcher's first name and as such, the results may not be valid enough to consider. Consultation with the three doctorate students revealed several cases where it was not possible to determine the researcher's gender and these cases were excluded from documentary recording. The extracted percentage of male and female researchers (54.03% vs 45.97%) from 2006 to 2010 was similar with the 55% vs 45% reported by Sherrill and O'Connor (1999). Male and female researchers therefore appear to have similar accessibility to APAQ. Overall, the present findings are limited from the method used to analyze our data and should be considered with extreme caution.

The gender findings may be partially explained from Ellery and Stewart (2000) who found both genders to be equally represented in Ph.D studies within the USA, while more females than males were enrolled in Master level graduate studies. Buswell, Sherrill, French and Myers (2001) on the other hand reported in their literature review that only a small portion of women publish throughout their academic career. The researchers examined the publication productivity rates of women scholars and reported that higher producers, with 3.06 average publications in the APA field per year, exhibited a wider self-determination, prioritization and collaboration with colleagues compared to lower producers with an average of 1.05 publications per year (Buswell et al., 2001). The findings of Buswell et al. (2000) may be a reason to speculate that women publicizing in APAQ are self-determined, with a conscious decision and passion to disseminate their research findings internationally, and maintain a research focus during their career.

Certain limitations appear in the present study and the results may be perceived with extreme caution. First, although the APAQ literature has been evaluated several times in the past, it has not been used to report the research trend in APA. Only Zhang et al.

(2006) examined that topic and reviewed the AAHPERD abstracts, from 1968 to 2004. Zhang et al. however reported results from linear regression analyses, by assuming linearity and without reporting any previous testing of basic assumptions. Further, their findings were based on different data analyses according to sample size, type of disability, type of study, etc. and were not comparable to those previously reported by scholars in the field (Porretta & Sherrill, 2005; Reid & Broadhead, 1995; Reid & Prupas, 1998; Sherrill & O'Connor, 1999). Second, the statistics reported in the present study (frequencies, percentages) are limited with respect to the documentary analysis used. Documentary count may be enriched in the future with statistics for comparing the frequencies of scientific areas examined, disability, quantitative vs qualitative method used, country authorship, sampling design, validity and reliability reports, theories used, etc. across time. Third, only APAQ served the purpose of the present study and the findings may be dictated from the editor's preference to publicize e.g. psychosocial issues, individuals with physical disabilities, etc. more often. Further, the number of scientific publications may be limited since APAQ is not a monthly but a quarterly journal. Extension of the journal's activity into a monthly may have a future impact upon the scientific areas published in the APA field, type of disability, methods used, country authorship, sampling design, theory, etc. Future researchers therefore may seek to evaluate the APA research trends emerging in a variety of journals, such as in the Clinical Kinesiology (e.g. Reid & Stanish, 2003), the European Journal of Adapted Physical Activity, etc. or even in databases with research work from institutions of higher education (e.g. Master thesis), since they both constitute a major body of knowledge in the field. Further, no qualitative information was gathered through e.g. interviews with international scholars, leaving this area open for future researchers.

Perspectives

The APAQ publications during 2006 - 2010 revealed increment of qualitative research, with specific samples recruited, while validity and reliability reports were still prominent and no emphasis was provided on sophisticated statistical analyses. Further, the APAQ literature may be perceived as strongly driven by theory. The above suggested that there is a research trend towards a more specific, in depth, qualitative approach in the field. Academic scholars and researchers may consider the above information when consulting with their graduate students and planning their future research endeavors in the APA field.

The present findings are in agreement with Bouffard, Strean and Davis (1998) who stated that 'a related trend is to strive from a heavy focus on statistical analysis toward more emphasis on meaning derived from language, discourse and symbols' (p. 264). This trend may be a healthy way to afford more focus upon the individual, at least when we want an individual level of analysis (Bouffard et al., 1998). A tendency for researchers in the field appears to withdraw from aggregating data when working with individuals, freeing in this way themselves from a perceived obligation to legitimize and validate all information they collect with probability values (Bouffard, 1993).

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(Abstract)

FORSCHUNGSTRENDS IN ADAPTED PHYSICAL ACTIVITY AUF BASIS DES APAQ JOURNALS (2006-2010)

Diese Studie versuchte die Forschungstrends in Adapted physical Activity (APA) zu identifizieren. Es wurde die Methode der Dokumentenanalyse verwendet, um 99 Studien zwischen 2006 und 2010 zu überprüfen. Die Mehrheit der Publikationen untersuchte psychosoziale Themen (29,29 %), Messmethoden/ Assessment/ Klassifizierung (20,20 %), Trainingswissenschaft/ körperliche Aktivität (14,14 %), Bewegungsverhalten/ Biomechanik (8,08 %) und Behindertensport (21,21 %). Probandengruppen aus Personen mit körperlicher Behinderung (17,89 %), mit verschiedenen Behinderungsarten (14,73 %) und geistige Behinderung / intellektuelle Beeinträchtigung (12,63 %) waren die öfter genannten. Im Hinblick auf Unterscheidung zwischen quantitativen und qualitativen Methoden wurden 74 Studien als quantitativ und 16 als qualitativ klassifiziert. Berichte über Validität und Reliabilität schienen in 82 Studien auf, während die Mehrheit der Probandenauswahlverfahren gezielt ausgesucht (21 Studien), rekrutiert (20 Studien) und freiwillig (17 Studien) waren. Bezüglich Theoriebezüge wurden die der Selbstwirksamkeit und die der Selbstbestimmung am häufigsten herangezogen. Insgesamt ist ein Trend festzustellen, Theorie dazu zu nutzen, um spezifische Samples qualitativ tiefergehend zu untersuchen und eine schwächere Tendenz geht dahin, Analysen mit differenzierter statistischer Software zu machen, randomisierte Probanden auszuwählen und die Ergebnisse zu generalisieren. Akademisch Lehrende und

Forschende sollten die oben erwähnten Folgerungen beachten, wenn sie ihre graduierten Studierenden beraten und diese vorhaben, Studien im Bereich APA anzustreben.

Schlüsselwörter: *Adapted Physical Activity - APA, Forschungstrends*

(Résumé)

COURANTS DE RECHERCHE EN ACTIVITÉ PHYSIQUE ADAPTÉE SUR LA BASE DU JOURNAL ADAPTED PHYSICAL ACTIVITY QUARTERLY (APAQ) (2006-2010)

La présente étude a tenté d'identifier les thèmes de recherche en Activité Physique Adaptée (APA). L'analyse documentaire a permis d'évaluer 99 études dans l'APAQ de 2006 à 2010. La majorité des publications ont examiné les questions psychosociales (29,29%), la mesure / évaluation / classement (20,20%), les sciences de l'activité physique / exercice (14,14%), le comportement moteur, la biomécanique (8,08%) et les sports adaptés (21,21%). Des échantillons de personnes ayant un handicap physique (17,89%), les catégories de handicaps différents (14,73%) et les déficiences mentales / intellectuelles (12,63%) ont été rapportées le plus souvent. Pour la distinction qualitative Vs. quantitative, 74 études ont été classées comme quantitative tandis que 16 études étaient qualitatives. La validité ainsi que la fiabilité sont apparues dans 82 études, alors que la majorité des méthodes d'échantillonnage étaient téléologiques (21 études), recrutés (20 études) et utilisant la commodité (17 études). Les théories de l'auto-efficacité et de l'autodétermination sont les plus fréquemment rapportées. Dans l'ensemble, il ya une tendance pour l'utilisation de la théorie pour examiner des échantillons spécifiques plus en profondeur, par la recherche qualitative, et une moindre tendance à rapporter des analyses avec un logiciel statistique sophistiqué, des échantillons aléatoires et la généralisation des résultats. Les universitaires et les chercheurs peuvent prendre note des conclusions ci-dessus lors de la consultation avec leurs étudiants de cycles supérieurs pour la planification de leurs futurs travaux de recherche dans le domaine de l'APA.

Mots Clés : *Activité physique adaptée, APA, courants de recherche*

(Аннотация)

НАУЧНЫЕ НАПРАВЛЕНИЯ В СФЕРЕ АДАПТИВНОЙ ФИЗИЧЕСКОЙ КУЛЬТУРЫ НА ОСНОВЕ ЖУРНАЛА «АРАК» (2006-2010)

В настоящем исследовании предпринята попытка выявить направления исследований в сфере Адаптивной Физической Культуры - АФК. Был использован документальный анализ

для оценки 99 научных исследований в «АРАQ» с 2006 по 2010 год. Рассмотрены большое количество публикаций по темам: психосоциальные проблемы (29,29%), измерения / оценки / классификации (20,20%), спортивная наука / физическая активность (14,14%), двигательное поведение, биомеханика (8,08%) и виды спорта для инвалидов (21,21%). Лица с ограниченными физическими возможностями (17,89%), различных категорий инвалидности (14,73%) и задержкой умственного развития / умственной отсталостью (12,63%) были зарегистрированы чаще. 74 исследований были классифицированы как количественные, а 16 исследований были качественными. Достоверность и надежность проявились в 82 исследованиях. Наиболее распространенными являются теории самоэффективности и самоопределения. В целом, наблюдается тенденция использования теории для изучения конкретных образцов более подробно, через качественные исследования, и более низкой тенденцией к анализу с помощью современных статистических программ, рандомизированных проб и обобщения полученных результатов. Академические ученые и исследователи могут рассмотреть вышеизложенные выводы в ходе консультаций со своими аспирантами и планировании их будущих начинаний исследований в области АФК.

Ключевые слова: Адаптивная Физическая Культура - АФК, научные направления

(Resumen)

**TENDENCIAS DE INVESTIGACIÓN EN ACTIVIDAD FÍSICA ADAPTADA EN
LA BASE DE REVISTA APAQ (2006-2010)**

El presente estudio trató de identificar las tendencias de investigación en Actividad Física Adaptada-APA. El análisis documental se utilizó para evaluar 99 estudios de investigación en APAQ desde 2006 a 2010. La mayoría de las publicaciones se examinaron cuestiones psicosociales (29,29%), medición / evaluación / clasificación (20,20%), ciencias del ejercicio / actividad física (14,14%), el comportamiento del motor, biomecánica (8,08%) y deportes adaptados (21,21%). Muestras de individuos con discapacidades físicas (17,89%), diferentes categorías de discapacidad (14,73%) y retraso mental / discapacidad intelectual (12,63%) fueron reportados con más frecuencia. Para la distinción cualitativa vs cuantitativa, 74 estudios fueron clasificados como cuantitativo, mientras que 16 estudios fueron cualitativos. La validez y fiabilidad de los informes apareció en 82 estudios, mientras que la mayoría de los métodos de muestreo fueron intencional (21 estudios), reclutados (20 estudios) y la conveniencia (17 estudios). Con respecto a las teorías, las de la auto-eficacia y la autodeterminación son las más comúnmente reportadas. En general, hay una tendencia a utilizar la teoría para examinar muestras específicas con mayor profundidad, a través de la investigación cualitativa, y una menor tendencia a reportar los análisis con un sofisticado software estadístico, las muestras aleatorias y la generalización de los resultados. Los académicos e investigadores pueden considerar las conclusiones anteriores al consultar con sus estudiantes de posgrado y la planificación de sus esfuerzos de investigación futura en el campo APA.

Palabras clave: Actividad Física Adaptada - APA, tendencias de investigación.

(Resumo)

TENDÊNCIAS DE PESQUISA EM ACTIVIDADE PHYSICA ADAPTADA TENDO POR BASE A REVISTA CIENTÍFICA APAQ (2006-2010)

O presente estudo pretende identificar as tendências de pesquisa em Actividade Física Adaptada-AFA. Foi utilizada uma análise documental para avaliar 99 estudos na APAQ entre 2006 e 2010. A maioria das publicações examinou assuntos de natureza psicossocial (29,29%), medida/ avaliação/ classificação (20,20%), ciências do exercício/ actividade física (14,14%), comportamento motor, biomecânica (8,08%) e desporto adaptado (21,21%). Amostras de indivíduos com deficiência física (17,89%), diferentes categorias de deficiência (14,73%) e deficiência mental/ deficiência intelectual (12,63%) foram identificadas como as mais frequentes. Para uma distinção qualitativa vs quantitativa, foram classificados 74 estudos como quantitativos enquanto que 16 eram qualitativos. Era feita menção a questões relativas à validade e à fidedignidade em 82 estudos, enquanto que a maioria dos métodos de selecção da amostra eram intencionais (21 estudos), por recrutamento (20 estudos) e de conveniência (17 estudos). No que diz respeito às teorias, a da autoeficácia e a da autodeterminação foram as mais frequentemente reportadas. Globalmente, existe uma tendência para utilizar a teoria para examinar amostras específicas em maior profundidade, através da pesquisa qualitativa, e uma fraca tendência para reportar análises com softwares estatísticos sofisticados, amostras aleatórias e generalização de resultados. Os académicos e os investigadores poderão ter em consideração as conclusões anteriores, aquando da orientação dos seus estudantes de graduação e no planeamento dos seus projectos de pesquisa futuros, no campo da AFA.

Palavras-Chave: *Actividade Física Adaptada - AFA, tendências de pesquisa*