

UNIVERSITY OF WISCONSIN-LA CROSSE

Graduate Studies

PHYSICAL EDUCATION TEACHERS' SPORT RECOMMENDATIONS FOR HIGH
SCHOOL STUDENTS WITH AUTISM SPECTRUM DISORDER

A Manuscript Style Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Science in Exercise and Sport Science-Physical Education Teaching
Adapted Physical Education Concentration

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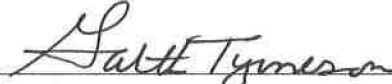
August, 2014

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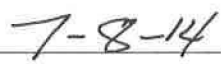
By William Helser

We recommend acceptance of this thesis in partial fulfillment of the candidate's requirements for the Master of Science degree in Exercise and Sport Science-Physical Education Teaching-Adapted Physical Education Concentration

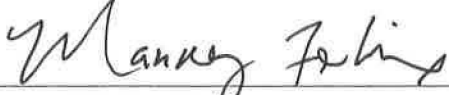
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ABSTRACT

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Students with autism spectrum disorder (ASD) display a wide variety of cognitive, behavioral, physical/motor, and social abilities that often require some level of support in their education, including physical education (PE) and sport participation. Sport participation can afford students with ASD much needed opportunities for development of physical and social skills. This study examined PE teachers' sport recommendations for two hypothetical high school students with different functioning levels of ASD (high and low). An online survey was completed by general and adapted PE teachers across the U.S. A total of 277 (APE = 152, GPE = 125) responses were used for statistical analyses. Results revealed that PE teachers recommend individual over team sports for both high and low functioning students with ASD. There were no sport recommendation differences between adapted and general PE teachers. Also, there were no differences in sport recommendations between high and low functioning levels of ASD. It was most recommended that high and low functioning high school students with ASD participate in: cross country running, swimming, and track and field. Sports least recommended for high and low functioning students with ASD were football, lacrosse, and ice hockey.

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INTRODUCTION

The American Psychiatric Association (2013) defines autism spectrum disorder (ASD) as a condition that encompasses autism, Asperger's disorder, childhood disintegrative disorder, Rett's disorder, and pervasive developmental disorder not otherwise specified. It is characterized by deficits in two core domains: social communication and interaction, and restricted repetitive patterns of behavior, interests, and activities (American Psychiatric Association, 2013). These characteristics can affect many aspects of everyday life for persons with ASD.

According to the estimates from the Centers for Disease Control and Prevention's Autism and Developmental Disabilities Monitoring Network (2014), about 1 in 68 children aged 8 years have been identified with an ASD. With the increasing prevalence of children diagnosed with ASD, it is important that all aspects of education, including extracurricular sports and activities, be available to these students. School and community-based personnel need to be aware of the responsibilities they have in order for this population to participate in and benefit from sport (Ohrberg, 2013).

Participation in sport and physical activity has been linked to many physical, social, and cognitive benefits for all children, including those with disabilities. According to Martin and Whalen (2012), individuals with disabilities can derive many physiological and psychosocial benefits from engaging in sport and physical activity (PA). Participating in PA and sport with peers can also increase social support, develop friendships, increase enjoyment, and develop an athletic identity (Martin & Whalen,

2012). According to Durstine, Moore, Painter, and Roberts (2009), exercise training has also been shown to have a positive impact on persons with disabilities such as cerebral palsy, intellectual disability, and mental illness. Exercise training improves mood and self-concept in persons with mental illness, increases time to exhaustion for persons with intellectual disabilities, and increases sense of wellness, body image, and capacity to perform activities of daily living in persons with cerebral palsy (Durstine et al., 2009). Individuals with disabilities who participate in sport are performing physical exercise which can lead to positive impacts on their health and well-being.

It is important to consider appropriate sports that individuals with disabilities can successfully participate in and to have knowledgeable coaches to lead these experiences. Using a six step approach towards the inclusion of students with disabilities into sport recommended by Davis (2011) can help increase participation. These six steps include: locating a sport, checking to see if there are any sports already offered for students with disabilities, learning about the sport and its skills, determining the students functional level of performance, assessing the student's skill performance, and finally selecting and implementing the appropriate game environment and modifications. Following these steps can assist students with disabilities to have opportunities to participate in sport.

While the literature has shown the benefits of sport for children with disabilities, little is known about what specific sports or type of sport (i.e., team vs. individual) children with ASD prefer for participation. Similarly, no research exists that documents the sports that physical education teachers recommend for persons with ASD. Due to a lack of participation in PA or sport, a sedentary lifestyle poses a threat to children with a disability (Lotan, Isakov, Kessel, & Merrick, 2004). Prolonged sedentary lifestyles can

lead to negative health risk behaviors in adolescents (Nelson & Gordon-Larsen, 2006). It is likely that adolescents with ASD who live sedentary lifestyles will develop negative health risks. In a recent study, researchers estimated 20% of children aged 6-17 years are obese with even higher estimates for children with developmental disabilities such as autism (Phillips et al., 2014). Phillips and colleagues (2014) found adolescents with autism had the highest obesity prevalence at 31.8%. Researchers speculate that this increased risk of obesity among children with autism might be driven by marked differences in their diet and physical activity patterns (Phillips et al., 2014). Todd and Reid (2006) suggest activities that do not require high levels of cognitive demands or high physical skill levels for individuals with ASD. To include students with ASD into sport, it is essential for their safety and enjoyment to determine the appropriate sports for them. By increasing opportunities for students with ASD to participate in sport, their physical activity levels should increase and in turn, health, social interaction, and behavior skills with their peers will be positively impacted.

Recent studies show the benefits of physical activity on many aspects of life for a child with ASD. For instance, a study completed by Rosenthal-Malek and Mitchell (1997) discovered that when children with ASD participated in frequent aerobic activity their attention span and on-task behavior improved. In similar literature by Lavay, French, and Henderson (2006), it was found that children cope better with their inappropriate behaviors after participating in vigorous physical activity.

Children with ASD are several months behind their same aged peers in gross motor skills (MacDonald, Lord, & Ulrich, 2014). At an early age, children participate in motor games (i.e., jumping, playing ball, and riding tricycles) and socially interact with

others while playing these motor activities. The interactions children with ASD have with their peers while playing may have a relationship on how well they are able to perform fundamental motor and play skills (Provost, Lopez, & Heimerl, 2007). Therefore, children with ASD need to participate in physical activity and sport to have interactions with their peers and develop their motor skills.

The purpose of this study was to investigate sport recommendations of adapted and general physical education teachers for students with ASD who function at high and low levels. The level of ASD and related cognitive functioning can greatly impact the ability of students to successfully participate in certain sports due to factors such as sensory sensitivities, communicating with teammates and coaches, understanding strategies and rules, and poor motor skills (Barber, 2010). Results of this study can assist teachers, coaches, parents, and others to best plan for successful sport experiences for those with ASD. The following research hypotheses were examined in this study:

1. Physical education (PE) teachers will recommend individual sports over team sports for high school students with ASD.
2. Individual sports such as track and field, cross country running, and swimming will be the most recommended sports by PE teachers for high functioning students with ASD.
3. Individual sports such as track and field, cross country running, and swimming will be the most recommended sports by PE teachers for low functioning students with ASD.
4. Team sports such as football, lacrosse, and ice hockey will be the least recommended team sports by PE teachers for high functioning students with ASD.
5. Team sports such as football, lacrosse, and ice hockey will be the least recommended team sports by PE teachers for low functioning students with ASD.

6. There will be no difference between the recommendations of general and adapted PE teachers regarding the types of sports for high and low functioning students with ASD.
7. The more experience teachers have with students with ASD, the more they will recommend individual sports rather than team sports.

METHOD

Participants

For this study, each participant had to be certified to teach physical education and have experience teaching students with ASD. A total of 377 adapted and general physical education (PE) teachers throughout the U.S. submitted surveys. After examining the surveys, 277 were used based on a criteria of 90% or more of the survey questions completed. The respondents represented teachers in 41 states. The frequency of respondents and percentages from each state are presented in Table 1. The number of adapted PE, general PE, and nationally certified adapted PE teachers (CAPE) who submitted surveys are indicated for each state.

As can be seen in Table 1, the majority of respondents were from California (n = 38), Colorado (n = 28), New York (n = 42), and Wisconsin (n = 68). When asked if the PE teachers were certified to teach adapted PE, 152 teachers (55%) responded yes and 125 teachers (45%) responded no. From the total number of respondents, 51 were CAPEs. The majority of the adapted PE teachers that submitted the survey were from California (n = 37) and Wisconsin (n = 57); the majority of the general PE teachers that submitted the survey were from Colorado (n = 26) and New York (n = 34).

Table 1. Frequency and Percentages of Responses from Each State.*

State	Number (%)	APE	GPE	CAPE
Arkansas	1 (0)	0	1	0
California	38 (14)	37	1	5
Colorado	28 (10)	2	26	3
Delaware	1 (0)	0	1	1
Florida	1 (0)	1	0	1
Georgia	1 (0)	0	1	0
Illinois	19 (7)	3	16	4
Indiana	3 (1)	0	3	1
Iowa	6 (2)	0	6	0
Kansas	1 (0)	1	0	1
Louisiana	16 (6)	16	0	1
Maine	3 (1)	2	1	1
Maryland	5 (2)	2	3	5
Massachusetts	3 (1)	1	2	0
Michigan	3 (1)	3	0	0
Minnesota	1 (0)	1	0	1
Missouri	1 (0)	0	1	1
Montana	2 (1)	1	1	1
Nebraska	1 (0)	1	0	0
New Hampshire	1 (0)	0	1	1
New Jersey	1 (0)	0	1	0
New Mexico	1 (0)	1	0	0
New York	42 (15)	8	34	3
North Carolina	4 (1)	2	2	3
Ohio	6 (2)	4	2	3
Oregon	1 (0)	1	0	0
Pennsylvania	1 (0)	0	1	0
Rhode Island	2 (1)	2	0	1
South Carolina	2 (1)	0	2	0
South Dakota	1 (0)	0	1	0
Tennessee	2 (1)	0	2	0
Texas	1 (0)	0	1	1
Utah	3 (1)	2	1	2
Virginia	5 (2)	3	2	3
Washington	2 (1)	1	1	1
Wisconsin	68 (25)	57	11	7
Total	277	152	125	51

*Note: APE = adapted physical education, GPE = general physical education, CAPE = certified adapted physical educator.

Figure 1 shows the number of male and female PE teachers and their amount of teaching/coaching experience in years with students with ASD.

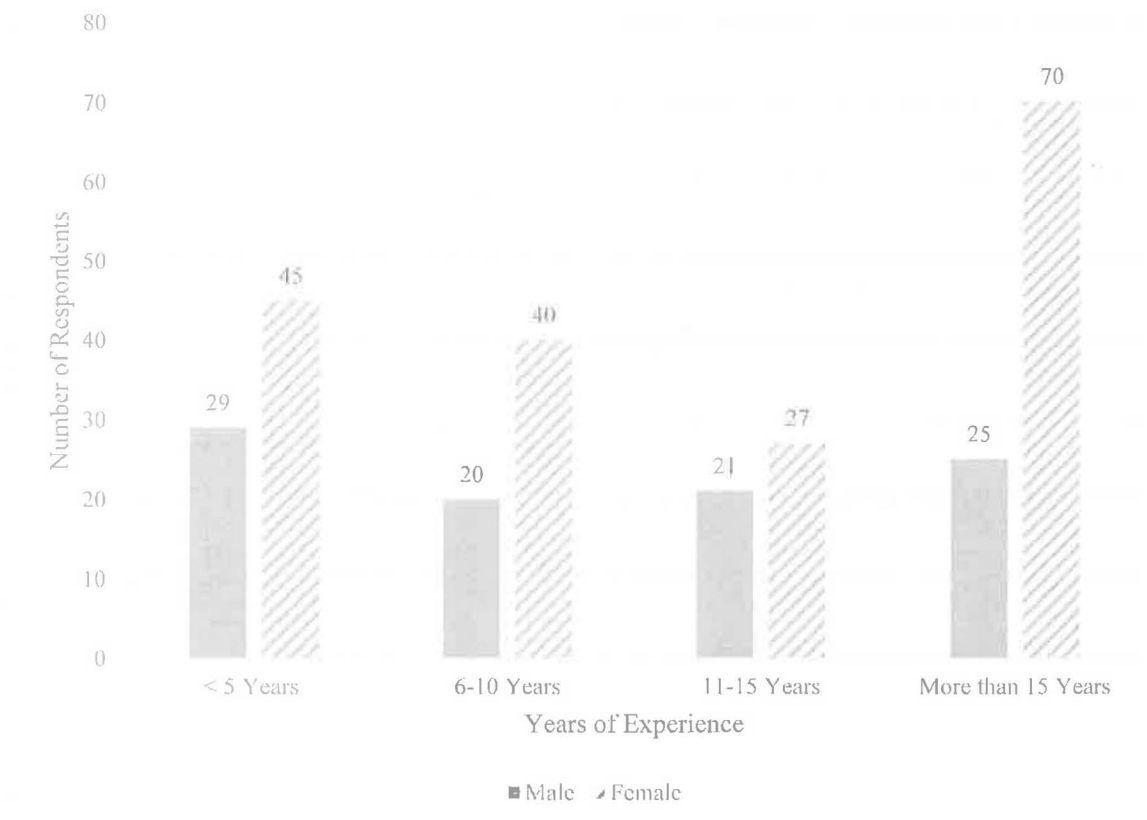


Figure 1. Years of Experience for Male and Female PE Teachers.

As can be seen in Figure 1, there were 182 female respondents and 95 male respondents. There were 95 respondents with more than 15 years of experience, 48 respondents with 11-15 years of experience, 60 respondents with 6-10 years of experience, and 74 respondents with less than 5 years of experience.

Figure 2 shows the state in which the adapted PE teachers received their adapted PE teaching certification or license.

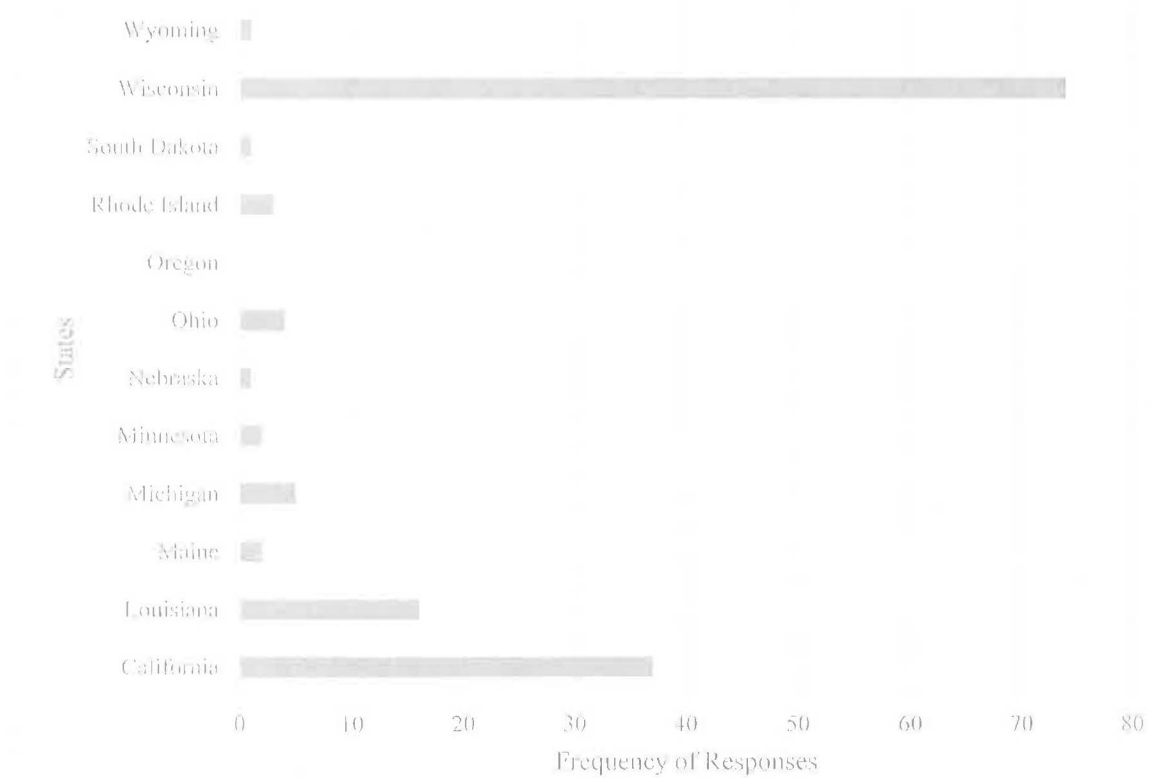


Figure 2. States in which Respondents Received their Adapted PE Teaching License. Note: Six respondents did not provide what state in which they received their adapted PE license.

For those that provided the state in which they received their certification, the majority were from California (n = 37) and Wisconsin (n = 74). Other responses included: Louisiana (n = 16), Maine (n = 2), Michigan (n = 5), Minnesota (n = 2), Nebraska (n = 1), Ohio (n = 4), Rhode Island (n = 3), South Dakota (n = 1), and Wyoming (n = 1).

Instrument

An online survey was used to gather information regarding sport recommendations for high school students with ASD. The survey was completed by general and adapted PE teachers and identified the following information: amount of experience teaching and coaching students with ASD, teaching credentials, APE teaching licensure, and sport recommendations for students with ASD.

The Physical Education Teachers' Sport Recommendations Survey (see appendix A) consisted of 10 demographic questions. The survey also included two definitions/scenarios. One of the definitions was of a student with ASD who functions at a high level. The second definition was of a student with ASD who functions at a low level. Based on these definitions, two scenarios were designed and the participants were asked questions relative to each scenario regarding what sports they most and least recommended for students with ASD at these functional levels.

Pilot Study

After completion of a draft survey and approval by thesis committee members, a pilot study was conducted with two certified APE teachers in Wisconsin who taught and coached for many years with students with ASD at all functional levels. The purpose of the pilot study was to review the content and format of the instrument. The pilot participants were sent an email with the background of the study, the purpose of the survey, the informed consent, and the link to the survey. The participants clicked the link embedded in the email which sent them directly to the survey. They completed the survey and met with the researcher to provide feedback on the format and content of the questions. Both pilot participants provided minor wording and formatting edits for questions on the survey. Edits were made to the scenarios to infuse the present level of the child's motor skills.

Procedures

The researcher obtained approval from the University of Wisconsin-La Crosse Institutional Review Board (IRB) to ensure the procedures protected the rights of the participants. The participants in the study were contacted via email (see Appendix B).

The survey was sent to members of the Minnesota Developmental/Adapted Physical Education Teacher list serve, Wisconsin general and adapted PE teachers, selected groups such as New York State Association for Health, Physical Education, Recreation, and Dance, Maryland adapted PE teachers, California adapted PE teachers, Virginia adapted PE teachers, and Illinois adapted PE teachers. Along with the link to the survey, a memorandum was sent asking for the participant to distribute the information and link to other general and adapted PE teachers. After the first mailing a follow-up email was sent to only a select few of the previously mentioned list serves.

Statistical Analysis

Data were downloaded from Qualtrics survey to an Excel spreadsheet. Descriptive statistics were used to answer the research hypotheses 1-5. Also, comparisons were made regarding sport recommendations between general and adapted PE teachers. Paired sample t-tests were used to examine differences of sport recommendations between general and adapted PE teachers for each level of ASD functioning (hypothesis 6). Linear regressions were used to see if the participants' teaching experience predicted their sport recommendations (hypothesis 7). After visual inspection, all data were transformed by using logarithm and square root transformations to meet the assumptions of parametric tests. All tests used an alpha level of $p < .05$ to indicate statistical significance.

RESULTS

The first hypothesis of this study examined the type of sports PE teachers recommended for a high school students with different functioning levels of ASD.

Figure 3 presents the results of these recommendations.

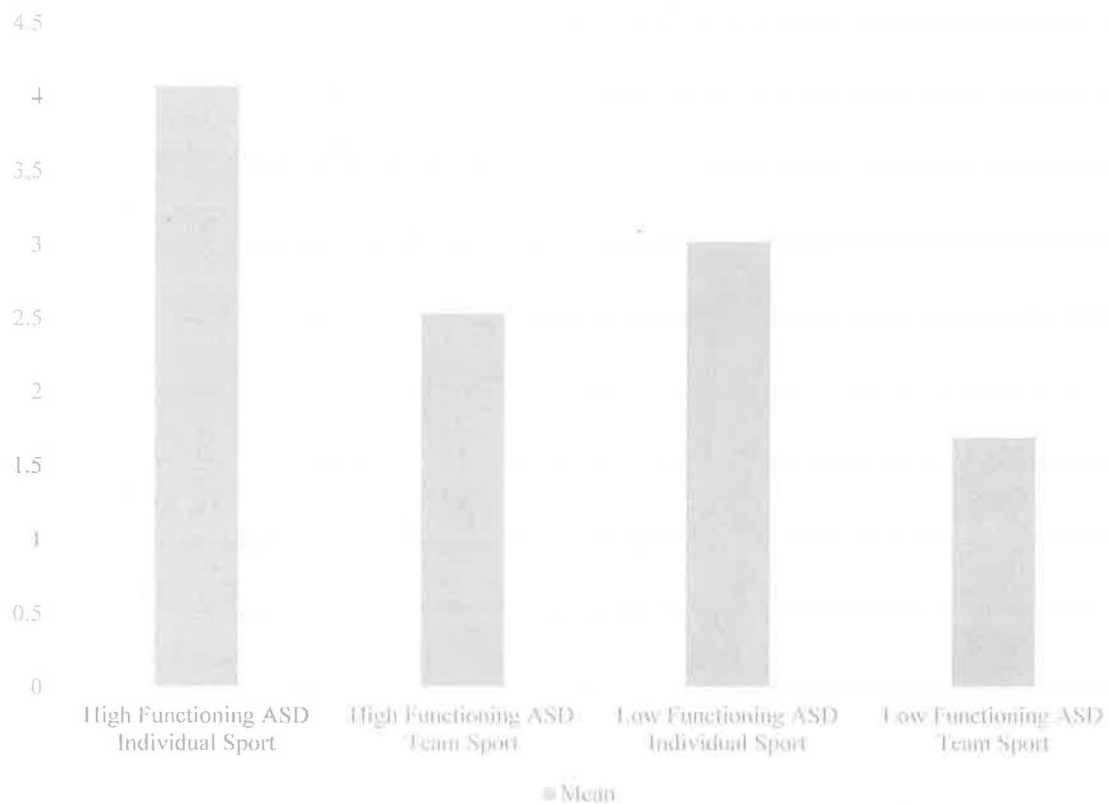


Figure 3. Type of Sport Recommendations for High School Students with ASD by General and Adapted PE Teachers.

As can be seen in Figure 3, individual sports (high functioning $M = 4.07$, low functioning $M = 3.02$) were recommended over team sports (high functioning $M = 2.53$, low functioning $M = 1.69$) for both high and low functioning high school students with ASD.

Table 2 and Figure 4 show the results for hypotheses two, three, four, and five regarding the specific sports PE teachers recommended for a high school student with high or low functioning ASD. Table 2 presents the mean and standard deviation of each sport recommendation by adapted and general PE teachers for high school students at both functioning levels of ASD. Figure 4 shows a visual comparison between the sport recommendations by the adapted and general PE teachers and the two levels of ASD functioning.

Table 2. Mean and Standard Deviation of Each Sport Recommendation by Adapted and General PE Teachers for High School Students with ASD.

Sports	High Functioning		Low Functioning	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Cross country running	4.51	0.87	4.02	1.24
Soccer	2.90	1.07	1.94	1.02
Football	1.93	1.05	1.29	0.62
Volleyball	2.64	1.06	1.77	0.95
Field hockey	2.36	1.06	1.51	0.78
Ice hockey	1.99	1.04	1.32	0.64
Basketball	2.99	1.05	2.09	1.08
Swimming	4.56	0.79	4.25	1.12
Wrestling	2.77	1.39	2.04	1.22
Baseball	2.83	1.06	1.86	0.99
Golf	4.26	0.96	3.54	1.26
Softball	2.94	1.04	1.98	1.02
Tennis	3.77	1.11	2.84	1.32
Track and field	4.57	0.68	4.17	1.09
Lacrosse	2.23	1.03	1.43	0.72

As shown in Table 2 and Figure 4, the three sports most recommended for both a high school student with high functioning ASD and low functioning ASD were the same: cross country running ($M = 4.51$, $M = 4.02$), swimming ($M = 4.56$, $M = 4.25$), and track and field ($M = 4.26$, $M = 3.54$). The three sports least recommended for a high school student with high functioning ASD and low functioning ASD are the same as well:

football ($M = 1.93$, $M = 1.29$), ice hockey ($M = 1.99$, $M = 1.32$), and lacrosse ($M = 2.23$, $M = 1.43$).

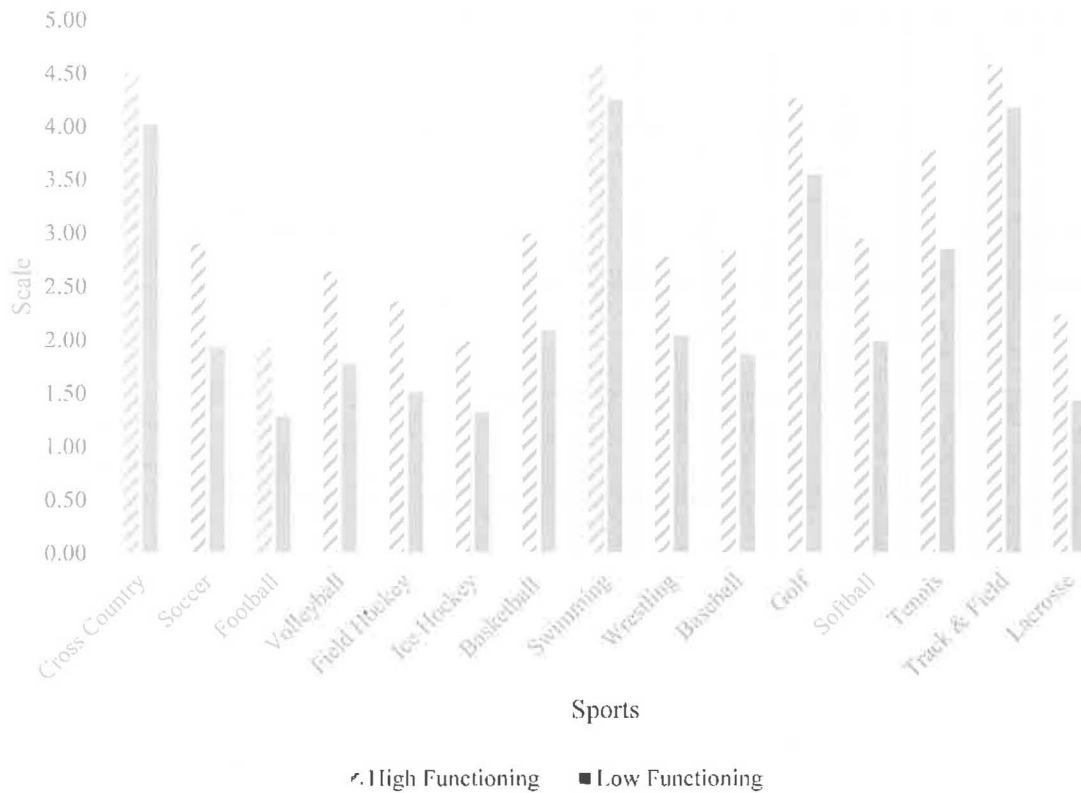


Figure 4. Most and Least Recommended Sports by Adapted and General PE Teachers for High School Students with ASD.

The inter-correlations of each sport recommendation by adapted and general PE teachers are presented in Table 3. This table also provides the inter-correlations of the levels of experience the PE teachers have teaching and coaching students with ASD. This table was used to help answer hypotheses 6 and 7.

Hypothesis 6 was tested to examine the differences between the recommendations of general and adapted PE teachers. Results in Table 3 show that among the two groups of PE teachers, there were no significant differences between the recommendations of general and adapted PE teachers regarding the type of sport for a high school student with

Table 3. Correlation between Type of Sport and the Teacher's Experience.*

	HFI	HFT	LFI	LFT	EXP	APEL
HFI	1.00					
HFT	.37	1.00				
LFI	.51	.36	1.00			
LFT	.08	.57	.34	1.00		
EXP	.07	.01	.001	.02	1.00	
APEL	-0.04	-0.02	.03	-0.11	-0.21	1.00

*Note: HFI = high functioning individual, HFT = high functioning team, LFI = low functioning individual, LFT = low functioning team, EXP = experience teaching/coaching students with ASD, APEL = adapted physical education license

high functioning ASD. The results were similar for the type of sport for a high school student with low functioning ASD as recommended by the two groups of PE teachers.

The final hypothesis was tested to see if the experience teachers had with students with ASD impacted the type of sport they recommended. As presented in Table 3, there were no significant correlations between teachers' teaching experiences and their sport recommendations and magnitudes of the relationships were very weak. A series of linear regressions found that the teachers' experiences did not predict their sport recommendations. Thus, hypothesis 7 was not supported.

DISCUSSION

Surveying PE teachers regarding sport recommendations for students with ASD is important because these professionals are knowledgeable in the physical skills and cognitive concepts required to participate in each sport. It is also important to determine sport recommendations for high school students with ASD because teachers can suggest to parents the various sports their students should be involved in for success and participation.

The purpose of this study was to determine the types of sport recommended by general and adapted PE teachers for a high school student with ASD. Findings support the hypothesis that PE teachers recommend individual sports over team sports for high school students with ASD. This was true for both high and low functioning students with ASD. Previous research supports this finding by suggesting individuals with autism participate in physical activities that do not require team environments or high motor skill levels (Todd & Reid, 2006). However, parents in a recent study did not have a preference for the type of sport being offered, which presents a case for further discussion (Alexander & Leather, 2013).

The findings of the research conducted by Alexander and Leather (2013) suggest that parents want their child with ASD to participate in sport programs to develop social skills and to be physically active. Although the findings of this research recommend participation in individual sports for high school students with ASD, team sports should not be excluded. Students with ASD who are able to successfully participate should still

consider team sports to improve their social skills with their nondisabled peers and for enjoyment. For students with ASD who are not successful participating in a team sport with nondisabled peers an alternative option may be more appropriate. One alternative would be to provide an adapted sports league just for students with varying disabilities. Adapted sport leagues provide students with social interactions, opportunities to be physically active, and safe participation in sport. These leagues are typically organized and coached by professionals who teach students with disabilities such as adapted PE and special education teachers. These professionals have experience working with these students and the knowledge of sport.

The current study examined the sports most and least recommended by general and adapted PE teachers for students with ASD at high and low levels of functioning. The findings of this study support multiple hypotheses that show the three most and least recommended sports for both high and low functioning students with ASD to be similar. The most recommended individual sports for high and low functioning high school students with ASD were cross country running, swimming, and track and field, and the least recommended team sports were football, lacrosse, and ice hockey. It was interesting to find these results for both levels of ASD functioning because of the vast differences in cognitive, psychomotor, and social abilities between the ends of the autism spectrum. For instance, participation in a sport like basketball that has many abstract concepts and tactics may be more appropriate for a student who functions at a high level of ASD. However, students who are functioning at a low level of ASD still could participate in basketball with modified rules. Each one of these students are different and may have different interests in sport. An important consideration is to find the right sport and get

them involved as early as possible. Of interest is a recent study by Alexander and Leather (2013) that showed similar results with swimming being the most preferred sport and football and lacrosse being least preferred by parents of students with ASD. By suggesting that parents who have children with ASD have their child participate in a swim program not only can be beneficial to improve their swimming skills, fitness, and decreasing stereotypical behavior but also their safety (Yilmaz, Yanardag, Birkan, & Bumin, 2004; Fragala-Pinkham, Haley, & O'Neil, 2011).

The current study also examined the differences between the sport recommendations of general and adapted PE teachers for students with ASD. Results supported the hypothesis that there are no significant differences between the sport recommendations by general and adapted PE teachers for students with ASD. This may be a result of the fact that most physical education teacher preparation programs require students at an undergraduate level to take courses and practicum in adapted PE. No differences between these two groups could also be a result from multidisciplinary team collaboration. Since the adapted PE teacher is more familiar with students with ASD and the general PE teacher is knowledgeable about inclusion, the two groups of teachers share information on what works best for students with ASD.

The results of this study revealed there is no evidence that the amount of experience teaching/coaching students with ASD predicted sport recommendations. This may result from current teacher preparation programs in which undergraduates are exposed to inclusive physical education settings and are more aware of the needs and abilities of students with ASD. These experiences provide better participation on how to provide appropriate PE and sport opportunities for students with ASD.

Another important aspect about the results of this study relate to the recent “Dear Colleague” letter from the Office of Civil Rights (U.S. Department of Education, 2013). This letter provides clarification to existing regulations and policies for schools and discusses the importance of extracurricular athletics for students with disabilities. If school districts are going to provide sport programs for students with disabilities, including ASD, then it is important to have information on sport for these students. The sport recommendations by the PE teachers from this study can assist schools in providing opportunities and support for students with all levels of ASD functioning.

There were limitations encountered during this study. One limitation was the number of participants. At the beginning of the study, a memorandum was emailed to multiple list serves in various states requesting state directors of professional organizations such as NYS AAHPERD and WHPE to forward the survey to all general and adapted PE teachers in their states. There was no process to verify whether or not a state director actually sent the email to teachers. Due to this limitation, the actual return rate of the survey could not be calculated. This could be overcome by asking the directors of the list serves to provide the researcher with the contacts they have on their list serv and by providing a question in the survey asking the participant to provide information on who they received the email from.

Another limitation of this study was that there was not a way to determine if the participants responded truthfully to the survey or understood each question. Overcoming this limitation can be difficult but with a strong sentence or two in the cover letter stating that it is important for the participant to be honest will likely be enough for the participant to answer each question truthfully. The final limitation was the amount of surveys that

could be used for statistical analysis. The researcher used data from the respondents who completed 90% or higher of the survey. To overcome this limitation multiple emails could be sent to the participants reminding them to finish the survey.

The increase in sport participation among persons with disabilities warrants more study in many areas. Further research should be conducted to investigate sport recommendations for students with other types of disabilities. This could be done by using similar methods and procedures as the present study. A similar study could be conducted by using a video for each scenario to clarify each functioning level of ASD. This would provide the participants with a better understanding of the various levels of ASD functioning. Another research idea is to survey adults and children with disabilities to see if preferences differ by age and/or gender. An important area to pursue is continued research with parents. It would be interesting to examine the factors that lead parents to enroll their children in sport programs. Further, it would be interesting to determine the sport recommendations for students with disabilities at all grade levels to promote physical activity and enjoyment. Finally, future research should focus on surveying students with ASD on their preferences of sport which then could be compared to the teacher recommendations.

CONCLUSION

Sport recommendations by general and adapted PE teachers are essential to provide high school students with ASD opportunities to participate in sport. This information can be used by parents and schools as they plan for meaningful programs that will result in more students with ASD participating in sport. It is clear from the results of this study that PE teachers recommend individual sports for both high and low functioning high school students with ASD. This type of sport is recommended because the rules, regulations, and concepts of individual sports are structured and more concrete for students with ASD to understand.

Although individual sports may be most recommended for students with ASD, a few select team sports may be appropriate if the student is given supports, accommodations, or is in an appropriate setting like an adapted sports league. Specifically, team sports like baseball, basketball, and soccer can be suggested to parents for their child with ASD to participate in to increase opportunities in developing social skills and enjoying team sports with their peers.

Sport recommendations by general and adapted PE teachers can assist parents of students with ASD in getting them to participate and be successful in sport. With the dissemination of this research, communities and schools will become aware of the sport opportunities students with ASD can participate in and be able to provide more meaningful experiences for these student-athletes.

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APPENDIX A
ONLINE SURVEY

Demographics

Physical Education Teachers' Sport Recommendations for Students with Autism Spectrum Disorder

1 In what state do you currently teach physical education?

2 What is your gender?

- Male
 Female

3 Do you hold an adapted physical education teaching license?

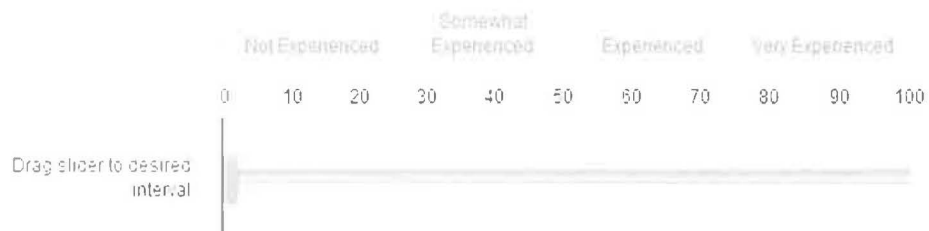
- Yes
 No

4 From which state did you earn an adapted physical education teaching license?

5 Are you a nationally certified adapted physical education teacher (CAPE) through the Adapted Physical Education National Standards (APEINS) process?

- Yes
 No

6 How experienced are you teaching/coaching students with autism spectrum disorder (ASD)?



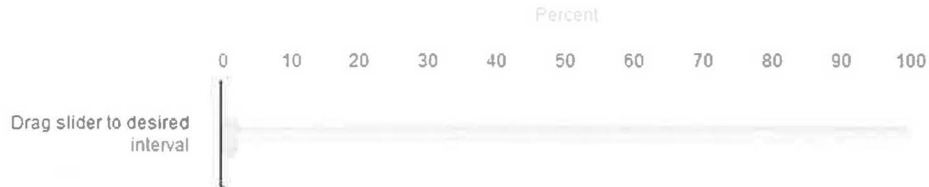
7 For each position below rate your level of confidence

	Not Confident	Somewhat Confident	Confident	Very Confident
Teaching PE to students with ASD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coaching students with ASD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8 For each position below, indicate the years of experience you have

	< 5 years	6-10 years	11- 15 years	More than 15 years
Teaching PE to students with ASD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coaching students with ASD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. What percent of your teaching caseload is with students who have autism spectrum disorder?



10 Indicate the percentages of your current teaching position--general and adapted physical education.

	0 - 20 %	21 - 40 %	41 - 60 %	61 - 80 %	81 - 100 %
General Physical Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted Physical Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Introduction

11 Scenarios for Students with Autism Spectrum Disorder

Students with autism spectrum disorder display a wide variety of cognitive, behavioral, physical/motor, and social abilities. In addition, these students display varying interests in sports. Each student has different likes and dislikes, and functions at different levels. The following scenarios describe different functioning levels of students with ASD for this survey.

These terms are defined as:

High level: Students with ASD at this level are able to speak in full sentences and engage in communication, but whose back and forth conversation with others fails. Their attempt to make friends are odd and typically unsuccessful. They also find it difficult to plan, to transition, and to be organized. For this scenario, assume that the physical/motor skills and cognitive abilities of these students are equal to or slightly below their nondisabled peers.

Low level: A student with ASD at this level exhibits a few words of intelligible speech and rarely initiates interaction. When he or she does, it is only to meet their needs and they only respond to very direct social approaches. This person also displays extreme difficulty coping with change and is unable to change focus or action. For this scenario, assume that the physical/motor skills and cognitive abilities of these students are significantly below their nondisabled peers.

Given the following scenarios, provide your best recommendations to parents of high school-aged children with ASD who are seeking your advice about participation in school sponsored sports for their child.

Scenario 1 - High Functioning ASD

12 **High Functioning ASD**. Students with ASD at this level are able to speak in full sentences and engage in communication, but whose back and forth conversation with others falls. Their attempt to make friends are odd and typically unsuccessful. They also find it difficult to plan, transition, and be organized. For this scenario, assume that the physical/motor skills and cognitive abilities of these students are equal to or **slightly below** their nondisabled peers.

Scenario 1 - High Functioning ASD

A parent seeks your advice about their 11th grade student who has high functioning ASD. The student functions at a high level of ASD but is socially awkward around peers. Rank the following sports 1 to 5 (1 being least recommended and 5 being most recommended) for this student to participate in an **integrated sport setting with nondisabled peers**.

	1 Least recommended	2	3	4	5 Most recommended
Cross country/running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soccer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Football	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volleyball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Field hockey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ice hockey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Basketball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wrestling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Baseball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Golf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Softball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tennis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Track and field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lacrosse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others, please specify: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. What type of sport do you feel is best for students with high functioning ASD? Explain your selection.

Individual

Team

Scenario 2 - Low functioning ASD

14. **Low Functioning ASD:** A student with ASD at this level exhibits a few words of intelligible speech who rarely initiates interaction. When he or she does, it is only to meet their needs and they only respond to very direct social approaches. This person also displays extreme difficulty coping with change and is unable to change focus or action. For this scenario, assume that the physical/motor skills and cognitive abilities of these students are **significantly below** their nondisabled peers.

Scenario 2 - Low Functioning ASD

An 11th grade student with low functioning ASD would like to participate in sports. His parents are inquiring about what sports he should participate in due to his poor social skills, lack of verbal communication, and limited independent behavior. The student functions at a low level of ASD. Rank the following sports 1 to 5 (1 being least recommended and 5 being most recommended) for this student to participate in an **integrated sport setting with nondisabled peers.**

	1 Least recommended	2	3	4	5 Most recommended
Cross country running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soccer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Football	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volleyball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Field hockey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ice hockey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Basketball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wrestling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Baseball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Golf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Softball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tennis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Track and field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lacrosse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others, please specify	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. What type of sport do you feel is best for students with low functioning ASD? Explain your selection.

Individual

Team

APPENDIX B

COVER LETTER AND EMAIL MEMORANDUM TO PARTICIPANTS

Cover Letter for Participants

Dear Physical Education Teacher:

As a graduate student in the Adapted Physical Education program at the University of Wisconsin-La Crosse, I am conducting a research study to determine what types of sports are recommended by physical education (PE) teachers for participation by students with autism spectrum disorder (ASD).

I would greatly appreciate your help in gathering this information. As a PE teacher with experience teaching APE to students with ASD, you have the knowledge of what students with ASD can most benefit from and how to include these students in sport settings. The survey should only take 5 minutes of your time.

Your response is very important to the success of this study. The information will be kept completely anonymous and the identity of your place of employment will not be divulged to anyone. All survey responses will be destroyed after the data are entered for analysis. All information collected for this study will be kept on a password protected computer with only one member of the research team having access to it. For this study to have scientific merit, it is important that you answer the questions thoughtfully and honestly. Only the members of the research team will see the completed surveys. However, it will be impossible to identify which answers are yours.

Your participation in this study is voluntary. You may choose not to answer any question, or to discontinue your participation at any time without penalty. Your voluntary completion and submission of this survey constitutes your informed consent to participate. This survey has been approved by the UW-La Crosse Institutional Review Board for the protection of human participants.

I appreciate your participation and thank you in advance for your assistance. If you have any questions about this research study, please contact William Helser at (716) 359-0067 or helser.will@uwlax.edu, or Dr. Garth Tymeson at (608) 785- 5415. Thank you for your assistance in completing this important survey.

Sincerely,

William Helser
Adapted Physical Education Graduate Student
University of Wisconsin-La Crosse
716-359-0067
helser.will@uwlax.edu

Memo to Participants

Dear General and Adapted Physical Education Teacher:

I am completing a project for my master's degree about what types of sports are recommended by physical education teachers for high school level students with autism spectrum disorder (ASD). I would greatly appreciate your help in gathering this information via a short survey. The survey consists of demographic questions and two sport-related scenarios about students with different levels of ASD. You will be asked to rate sports for students with specific functioning levels of ASD.

Your participation is very important due to your experience and expertise in physical education and sport. There are no right and wrong answers. Your responses will be anonymous, and participation is voluntary. Completion and submission of the survey will indicate your informed consent.

Please complete and submit the survey by **April 15, 2014**. Thank you very much for your time and participation.

Click on the link below for the survey:

[Physical Education Teachers' Sport Recommendations for Students with Autism](#)

Thank you for completing this survey. Your assistance is much appreciated.

Sincerely,

Will Helser, APE Graduate Student

Garth Tymeson, Professor-Adapted Physical Education

APPENDIX C
INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

UNIVERSITY *of* WISCONSIN
LA CROSSE

To: William Helser

From: Bart Van Voorhis,
Coordinator Institutional
Review Board (IRB) for
the Protection of Human
Subjects
bvanvoorhis@uwlax.edu

5-6892

Date: January 14, 2014

Re: **RESEARCH PROTOCOL SUBMITTED TO IRB**

The IRB Committee has reviewed your proposed research project entitled: ***“Physical Education Teachers’ Sport Recommendations for High School Students with Autism Spectrum Disorder.”***

The Committee has determined that your research protocol will not place human subjects at risk. **The attached protocol has been approved and is exempt from further review per 45CFR46, 46.101(b)(2).**

However, it is strongly suggested that Informed Consent always be used. Remember to provide participants a copy of the consent form and to keep a copy for your records. Consent documentation and IRB records should be retained for at least 3 years after completion of the project.

Since you are not seeking federal funding for this research, the review process is complete and you may proceed with your project.

Good luck with your project.



APPENDIX D
REVIEW OF RELATED LITERATURE

REVIEW OF RELATED LITERATURE

Introduction

Participation in sport has been linked to many physical, social, and cognitive health benefits for all persons. Research has shown these benefits to include increased academic performance, improved social behavior with others, and improved cardiovascular strength and endurance (Donaldson & Ronan, 2006; Melnick, Sabo, & Vanfossen, 1991; Pate, Trost, Levin, & Dowda, 2000; U.S. Department of Health and Human Services, 1996). Sport has influenced many to become physically active during their leisure time and is an important aspect of society. Social media and the news media covers sport and is a big influence on how people view it (Frey & Eitzen, 1991). The increased media coverage on persons with disabilities in sport encourages others with disabilities to participate.

Much research has been conducted to show the benefits for persons with disabilities participating in sport and physical activity. Martin and Whalen (2012) state that individuals with disabilities can derive a multitude of physiological and psychosocial benefits from engaging in sport and physical activity (PA). Participating in sport and PA can improve health and being in good health can lead to opportunities for persons with disabilities to become employed and educated (U.S. Department of Health and Human Services, 2005). As part of the Surgeon General's (2005) goal, persons with disabilities can promote their own good health by developing and maintaining healthy lifestyles. A strategy that can be easily implemented is to conduct research that will identify healthy

options, such as sport programs, for persons with disabilities (U.S. Department of Health and Human Services, 2005).

The present research study was to investigate sport recommendations for high school students with autism spectrum disorder (ASD) by adapted and general PE teachers. Participating in PA and sport with peers can also increase social support, develop friendships, increase enjoyment, and develop an athletic identity (Martin & Whalen, 2012). Todd and Reid (2006) suggest activities that do not require team environments or high skill levels may be more appealing to individuals with ASD. Sitting volleyball on the other hand is a preferred team sport by some individuals with disabilities (Vute & Urnaut, 2009).

While there has been many studies that show the impact of sport and physical activity has on children with disabilities, little is known about what sports are recommended for children with ASD. The purpose of this study was to investigate the types of sports high school students with ASD should participate in as recommended by general and adapted physical education teachers. This review of literature focuses on the benefits of participation in sport for students with disabilities and the benefits of PA for students with ASD.

Benefits of Participation in Sport for Students with Disabilities

Many studies have shown benefits of sport participation for students with disabilities. Along with the benefits, these studies provide support that is needed to promote sport participation for all students. Vute and Urnaut (2009) examined what sports were preferred by children with physical disabilities from Slovenia, according to those that attended physical education (PE) classes, those who were excused from PE

class, gender, and the use of mobility aids. Since there is very little known about which sports children with physical disabilities prefer, this study attempted to investigate what school and community based programs should provide for these individuals.

One-hundred seventy children with a physical disability participated in this study. Of those 170 participants, data from 8 were not included due to the research plan which limited the age to 21. Participants completed a questionnaire in the Slovene language and consisted of questions pertaining to 44 different sports. Participants were instructed to mark each sport with one of the three options: (1) I am active in this sport, (2) I wish to participate in this sport, or (3) I have no interest in participating in this sport. Over a three year period, data were collected by conducting personal interviews to make sure all of the respondents understood what was requested.

The results of the study showed that children with a physical disability who attended PE class participated in swimming, table tennis, diving, and showed no interest in rhythmic gymnastics and sitting soccer. For those who were excused from PE class, they preferred chess, swimming, and luge; desired motor sports, diving, and archery; and showed no interest in rhythmic gymnastics, wrestling, and boxing. Popular sports among males who attended PE class from Slovenia were chess, basketball, and darts whereas the unpopular sports were kayaking, wrestling, fencing, and rowing. Males who were excused from PE classes participated in rhythmic gymnastics, gymnastics, and skating. Females who were asked the same questions as males preferred participating in swimming, table tennis, horseback riding, luge, and chess. Unpopular sports among females were sitting soccer, wrestling, boxing, karate, and chess. Children with the use of mobility aids preferred bocce, wheelchair basketball, wheelchair hockey, and tennis.

The data collected from this study about the sport preferences of children with disabilities in Slovenia can be used to provide valuable information to determine sports children with physical disabilities prefer.

Findings by Wegner and Struthers (2011) support the previous study. The author's purpose was to determine the types of sports that were available and the factors that helped facilitate participation in sport at schools for children with physical disabilities in the Western Cape of South Africa. Wegner and Struthers (2011) claimed that the three factors that facilitate the participation of learners with physical disabilities in sport are support from sports organizations, financial support, and support from therapists.

The study used a cross sectional survey design that was used to collect data in three parts, targeted at different audiences. The first part consisted of 43 learners with physical disabilities, which was narrowed to 31 due to 12 parents/guardians refusing consent. The second part of the survey involved one teacher who was chosen by the principal at each school that accepted learners with physical disabilities. The third part involved questioning teachers at special schools. The learners with physical disabilities were questioned to find out about past participation in sport and their perceptions of the barriers to participation. The teachers from ordinary schools were questioned to determine which sports were offered at their school, if there was any sport offered specifically for a learner with a physical disability, if the teachers had adequate training that was related to the disability, and their perceptions of the barriers of sport participation. Lastly, the teachers from the special schools were questioned to determine what sports were offered at their school.

The results of this study showed that swimming was the sport that most learners with physical disabilities would have liked to pursue. According to the teachers, the factors that reduce participation in sport were the shortage of resources in ordinary schools and the poorly trained and educated teachers that teach learners with physical disabilities. The support from therapists and training of teachers on how to teach specific sports to children with disabilities is a practical solution to increasing participation in sport. With the support from administrators to finance more facilities and resources, participation in sports by children with physical disabilities will likely increase.

Research on students with disabilities participating in school activities has been an area of growing interest. A study by Simeonsson, Carlson, Huntington, McMillen, and Brent (2001) surveyed special education teachers and teachers of students with mobility impairments from across the U.S. The purpose of this study was to assess the participation of students with disabilities in school activities, to identify underlying factors, and to examine sources of variability.

The researchers sent out 3,000 surveys to teachers in all 50 states and D.C. Demographic information was provided in regards to location of school, grades taught, and school type. The national survey consisted of 56 questions asking the teachers about the school environment, the function, and participation of the student with the disability. Each teacher was asked to select a student they knew well and to provide a variety of information about the student. The format of the survey questions varied. Some questions asked the respondents to choose the appropriate answer from a list of options and other questions required single word answers and a short phrase or two.

The majority of the results from this study were reviewed in terms of three broad

questions. The three questions related to the characteristics of students with disabilities, the extent of participation in activities by students with disabilities, and the extent to which participation varied as a function of characteristics of students and the school environment. The findings indicate the interactive nature of participation in school activities and the quality of life of persons with disabilities. This study also revealed that when accommodations are provided for students with disabilities it increased participation in school activities. Based on this research, schools should provide an appropriate environment for students with disabilities in order for them to achieve personal independence in school sponsored activities including sport.

One aspect of this research is understanding why the individual participates in sports in the first place. Sit, Lindner, and Sherrill (2002) examined sport participation of school aged Chinese children with disabilities attending special schools in Hong Kong. Of the five research questions asked, the three that this study focused on were the motives of participation, nonparticipation, or withdrawal in sport and the most popular sports decided by those individuals.

The study involved Chinese children ages 9 to 19 years with physical disability, visual or hearing impairment, mild mental disability, or maladjustment. The sampling was random with 10 schools drawn from the 30 special schools in Hong Kong to select 5 to 6 students from one class at the primary level and at the secondary level. The final sample size was 237 which was then broken down according to independent variables such as: gender, school level, and type of disability.

The results of this study provide valuable information on the most popular sports among these individuals as well as the reasons why they either participate, don't

participate, or withdrew themselves from sport. From the study, 38% of the participants chose basketball as their most desired sport to play. Following basketball were soccer, badminton, swimming, and table tennis. This study also examined the motives of participation, nonparticipation, and withdrawal from sports. According to the results, children with disabilities participated in sports because it was fun, increased fitness, and gave them the desire to achieve their goals. The most important nonparticipation motive was because they wanted to do their own thing. Motives for withdrawing from sports by children with disabilities included having other things to do and studying for other subjects.

Considering the results from this study, researchers should determine children's sporting needs or motives based on their personal information, interests, the type of disability, and what sport opportunities their disability will allow. This will help increase sport participation among many individuals with disabilities.

Relationships among peers are significant motivational influences on sport participation for young athletes with and without disabilities. A study by Shapiro and Martin (2014) examined the quality of friendships, physical self-perceptions, and general self-worth to see if they predicted close friendships, loneliness, and social acceptance.

The study included 46 athletes with physical disabilities ages 12 and 21 years. The participants disabilities included in this study were spina bifida, cerebral palsy, traumatic brain injury, spinal cord injury, muscular dystrophy, and others consisting of amputations, scoliosis, and spinal muscular atrophy. These athletes completed the Sport Friendship Quality Scale (SFQS), a Loneliness Rating Scale, and the Self-Perception Profile for Adolescents (SPPA).

The participants had all questions read aloud to them to ensure understanding. Athletes who needed assistance recording their answers because of their disability had their answers recorded for them. Each questionnaire took approximately 20 minutes to complete. After data collection and statistical analysis the researchers found that participants who have high confidence in their athletic abilities and who hold themselves in high regards also have close friendships and low levels of loneliness.

This study was also the first to examine sport and nonsport friendship quality. The researchers found that there were stronger positive friendships with close friends outside of adapted sport. The researchers suggest further study to examine the link between peer relationships in interscholastic adapted sport and affect, attributions, expectancies, and future sport participation. They also suggest to examine the impact of the motivational factors created by adapted sport coaches.

Many participate in sport for multiple reasons with enjoyment being one of the most influential. Robertson and Emerson (2010) examined the participation in sports by people with intellectual disabilities (ID). The authors considered many aspects that are relevant to individuals with disabilities participating in sport, the overall participation in sport, factors associated with participation, and enjoyment in sport. Data were drawn from the survey of *Adults with Learning Disabilities in England 2003/4* (Robertson & Emerson, 2010) that involved 2,898 adults with ID. They narrowed the sample size to 2,784 participants after excluding those identified as possibly not having an ID. The authors analyzed the responses of the survey and measured participation in sports. The respondents were asked a series of questions that related to participating in sports.

The results of this study showed that 41% of the respondents had taken part in sports or swimming in the last month and of those responses 97% said that they enjoyed participating. The authors suggest promoting participation by means of social relationships and fun rather than authoritarian and prescriptive statements about the health benefits of exercise. This study suggests possible ways of involving individuals with disabilities by making the opportunities more enjoyable and socially inviting.

Most, if not all, information about what motivates athletes to participate in sport comes from the perspective of athletes without disabilities. Similar to the previous study, Harada and Siperstein (2009) examined the sport experience of athletes with ID as well as why these athletes participate in Special Olympics (SO).

For this study, family members and athletes were selected randomly from 17 state SO programs in the U.S. to be interviewed. These interviews were conducted over the phone with families and athletes, and it was anticipated that in some households, athletes wouldn't be able to participate due to limitations in their language ability. A total of 1,307 family members were interviewed, of which 555 had athletes who were still participating in SO while the remaining athletes were no longer participating. In addition to the 1,307 family members, 579 athletes were also interviewed. Of those, 303 were active and the rest were inactive.

The results of this study are presented for the athletes sport experience in SO and their reasons for participating in SO. In relation to the sport experiences, over two-thirds of the responses from the family members who were interviewed indicated that their athlete has been involved with SO ever since they were in elementary or middle school. For almost one-third of the athletes, SO was not their first organized sport experience.

The athletes involved participated in team and individualized sports. From this study, both male and female athletes reported that the most commonly played individual sports were track and field and swimming, and the most common team sports played were bowling, basketball, and softball. Of the 579 athletes who participated in interviews, most of them only gave one response to why they participated in SO. The athletes most frequently reported that their motivations for participation were fun, followed by friendship and achievement.

Results from this study provide a description of the sport experience for athletes with ID's. From this study, giving the opportunity for individuals to become involved at an early age will result in long term participation in sport if the environment is enjoyable, friendly, and competitive.

There are many benefits of participation in PA for individuals with disabilities including physical, mental, and social health. A study by Kissow and Singhammer (2012) investigated the correlation between participating in PA and other everyday activities of people with disabilities.

The sample of this study included all persons in Denmark between the ages of 16 to 64 years with accurate telephone numbers. After an extensive selection of individuals that could participate, the size went from 16,176 individuals to 2,505. These individuals participated in an expanded interview based on the following criteria: having a flexible job, having a disability, and having a long-term health problem. After this expanded interview, the final population for this study was 922 persons. These individuals were asked a series of questions including, "Do you participate in sports and/or physical

activity on a regular basis outside of your own home?” Other questions were related to employment and other societal aspects.

This study presents reasonable data based on the results of interviews that were conducted to determine if there is any correlation between participating in PA and participating in other everyday activities. The study shows that the respondents participating in physical activities were more engaged in other everyday activities than respondents who were not physically active. The other questions in the interview that related to employment, education status, and other societal aspects also showed that whoever participated in physical activity had a higher status in education and better employment. This study included a broad spectrum of disabilities with the exception of ID. This information can inform the community of persons with disabilities that being physically active can have positive impacts on your everyday life activities such as employment, education status, and voluntary work.

The effects of participating in sport with peers who do not have a disability or those with a disability can be different for everyone. Rikken and Ulrich (1993) examined the effects of segregated and integrated programs on athletes' self-perceptions of competence in the physical and social domains as well as general feelings of self-worth.

The study consisted of 75 adult men with ID between the ages of 18 and 40 years. Twenty-five of the adults participated in traditional SO basketball and another 25 adults participated in the Unified basketball league. Special Olympics (2003) defines “unified” as a program that combines approximately equal numbers of SO athletes and athletes without ID (partners) on sports teams for training and competition. The other 25 adults did not participate in any sport or athletic program and served as a control group. The

study measured self-perceptions by using the Perceived Competence Scale for Children (Harter, 1982) to gather information on self-perceptions of physical and social abilities and general self-worth. The scale consisted of 21 statements that were related to the three domains of interest. Each of these statements had two parts either indicating a high perception of competence or a low perception.

A Tukey post hoc test was used to determine the critical differences between the groups. Results revealed that the unified and traditional groups were equal in social self-concept in the beginning of the program while the unified group demonstrated a greater increase following program participation. This study provides the information needed for professionals such as an adapted physical educator to start a unified or segregated sports league for individuals with disabilities.

Persons with disabilities often experience barriers when trying to participate in PA or sport. Tsai and Fung (2009) examined the factors that influence inclusive participation in sport of individuals with ID through the perspectives of their parents. Their study included in-depth interviews with 49 parents of children with disabilities whose ages ranged from 39 to 85 years. Of those participants, 85% were women. These participants were recruited from 11 organizations that provided services, recreation, and sport programs for people with ID. Interviews were conducted in locations that best suited the participants such as special schools, sports halls, and cafes. The average length of the interviews was 45 minutes and each of them were audio taped. Data were collected by means of coding using the constant comparison process to identify, combine, and organize themes and patterns from the responses.

The results from the analysis of the interview data found nine themes associated with the experiences of the parents and their opinions in regards to including their children with ID into sport and recreation programs. These nine themes were: negative social attitudes, community's lack of understanding and knowledge about people with ID, providers' attitudes toward inclusion, social contact opportunities and conditions, behaviors of individuals with ID, parents' sense of entitlement and awareness of civil rights, parents' fear of harassment, parents' sport values, and participation information and opportunities (Tsai & Fung, 2009). The themes reflected the current conditions and problems associated with inclusive sport and recreation development in Hong Kong. With this information professionals and other members of the community can help make inclusion sport programs available for children with disabilities by informing the parents.

The environment should be safe and appropriate for all children to participate in sport. As an adapted physical educator making adaptations for everyone in order for them to participate can have positive and negative impacts on an individual. Kalyvas and Reid (2003) studied the effects of sport adaptations on participation and enjoyment of students with and without physical disabilities.

For their study, there were 35 participants ranging in age from 7 to 12 years. Fifteen of the participants had a physical disability and the rest had no disability. Five of the students with disabilities were nonambulatory with cerebral palsy (CP) and spina bifida. Ten were ambulatory with CP, spina bifida, or arthritis who needed support with walking. Students attended a reverse integrated special school in a large metropolitan area where they participated in nonadapted and adapted games. Systematic observation techniques were used to collect data on behaviors of the students and the Intrinsic

Motivation Inventory Scale (Ryan, 1982) was used to measure the enjoyment of the students following the games they participated in the physical education class.

The results of this study focused primarily on the effects of adapting and not adapting games for the participants to play. For the students with disabilities, the adapted game resulted in more successful passing attempts, more active time on task, and less inactive time. As for the nonadapted game, there was a lesser amount of successful passes, less active time on task, and more inactive time.

This study indicated that the adapted game helped students participate more successful. With the increase of success, the enjoyment level of the participants increased for both activities. This information provides a good foundation for the adapted physical educator in order to start an adapted sports program. Providing adaptations for students with disabilities to participate in sports will likely increase the participation and enjoyment level of those students.

Benefits of Physical Activity for Students with an Autism Spectrum Disorder

There has been little research conducted to determine the benefits for physical activity and sport participation for students with ASD. Research in this area can provide school districts, families, and individuals with information on participation in physical activity and sport for students with ASD. Yilmaz, Yanardag, Birkan, and Bumin (2004) focused a study on swimming and how it effected the physical fitness, water orientation, and behavior of a child with autism. Since swimming was perceived by the authors to be the preferred sport by many children with physical disabilities, this study can help assist parents and education professionals to introduce this sport to increase ones physical fitness.

This study assessed a nine year old boy with autism on his physical fitness, water orientation, swim skills, and behaviors. The swimming program was conducted over 10 weeks, with three, 60 minute sessions a week. The boy was assessed before and after the 10 weeks of training to determine if there was any improvement.

The results after the 10 week training showed improvement in the child's balance, speed, agility, power, hand grip, upper and lower extremity muscle strength, flexibility and cardiorespiratory endurance. No specific test was used to assess the above improvements, but the water orientation was assessed by a checklist that showed that the child was able to orient himself in the water. After the training, it was shown that the stereotypical behaviors of a child with autism decreased. Children with autism vary on both ends of the spectrum. They can either be low or high functioning. This study does not provide information on what end of the spectrum the child was on. Although this study was conducted on one subject, it provides parents with some relevant information about their child with autism by including them into aquatic programs.

The amount of subjects play an important aspect in gathering information, providing reliable and valid results, and about an area of research. A study by Fragala-Pinkham, Haley, and O'Neil (2011) included an exercise group of 12 children who functioned high on the autism spectrum. The purpose of the study was to measure the effectiveness of a 14 week aquatic exercise program on this group of children.

The researchers had specific criteria for participants to be included in their study. Criteria were: the child must be diagnosed with ASD, be 6-12 years of age, able to participate in aquatic exercises, have no medication changes during research period, no requirement for constant monitoring of behavioral status, and are able to follow

directions and comply with fitness testing (Fragala-Pinkham et al., 2011). Of the 12 participants, 7 were in the intervention group and 5 were in the control group. The intervention group participated in an exercise program 40 minutes in duration, 2 times a week for 14 weeks. The exercise program consisted of 20-30 minutes of aerobic activities, 5-10 minutes of muscular strength and endurance training, and 5 minutes of cool down and stretching activities. These programs were conducted by YMCA staff with a 1:2 adult-to-child ratio and was supervised by a pediatric therapist and lifeguard to ensure safety.

The results of this study showed significant improvement in swimming skills for the intervention group and no between groups differences were found for any of the outcomes. There was an improvement of muscular endurance but did not meet the statistical cut off to be deemed significant. The researchers suggest the reason is because of the small sample size. Based on a program questionnaire given to the parents and participants, the program proved to be enjoyable and meaningful. With a larger sample size more improvements in physical fitness may be visible. Fragala-Pinkham et al. (2011) acknowledge the children and parents for participating and include that both children and parents felt that the program was successful in many ways. The development of a swimming program for children with ASD can improve their social development, and self-esteem in addition to their health. Teaching children with ASD how to swim can influence them to join a swim team or just swimming leisurely.

Parents typically know what is best for their child and are mainly responsible for signing their child up for community sport leagues or activities. A study by Alexander and Leather (2013) surveyed parents to find out what they thought were best sports for

their child with ASD. The purpose of this study was to determine perceptions of parents of children with ASD related to sport programs' specific characteristics, coach-child ratio, coach qualification standards, and primary focus.

The authors sent surveys to 54 parents of children with ASD. Of these children, parents reported that 33 had autism, 10 had Asperger's syndrome, 2 had pervasive developmental disorder, not otherwise specified, and 9 parents chose not to specify the pervasive developmental disorder their child had been diagnosed with. The survey consisted of 20 multiple choice questions that represented five distinct themes, including: demographic information, types of sport programs, specific goal of sport programs, specific characteristics of sport programs, and coaching ratios and qualifications.

Data were summarized with Microsoft Excel to calculate frequency counts and percentiles. The results of the study presented much information in regards to the frequency of participating in sport programs per week, sport preferences, coach-child ratio, and the qualifications of being able to coach children with ASD. The majority of the parents reported they wanted their child to be involved in 2 to 4 hours per week. The parents also reported which sport their child would be most interested to participate in. Swimming was the most preferred with basketball, baseball, and soccer being the next three sports. As for the ratio of children to coaches, having one head coach and one-on-one interactions with volunteers was most reported by parents (45%), and second, with 25% of parents saying that just having a head coach with a "handful" of volunteers for the entire group was acceptable. When parents were asked about the qualifications a coach should possess there were varying results. The most common qualification a coach should have reported by the parents is a college degree in special education, followed by

having a disability specific volunteer training. The questions that were asked about what the primary focus of the program should be, the parents reported that they want their children to develop social skills, to be physically active, and to be provided with recreation opportunities. Results of this study reveal many opinions from parents that want their child with ASD to participate sport opportunities. The researchers also provide many recommendations for coaches, practitioners, and sport administrators to consider when they are processing signups for community sport programs and other athletic opportunities for children with ASD. These recommendations are: offering programs more than one time a week, offering a variety of sports, devise a Unified Sports program, collaboration amongst community members and parents of children with ASD, providing social skill development into programs, offering educational sessions on disability training to people that want to coach, and determining the level of competition. These recommendations are crucial to any community that wants to get students with disabilities incorporated into sport programs.

Participating in sport and physical activity has many benefits for everyone ranging from enjoyment to improving one's health (Donaldson & Ronan, 2006; Melnick, Sabo, & Vanfossen, 1991; Pate, Trost, Levin, & Dowda, 2000; U.S. Department of Health and Human Services, 1996). While many take for granted the opportunities to participate in sport and physical activity, persons with disabilities may find it to be more difficult and limiting.

There has been much research conducted to show the benefits of persons with disabilities participating in sport or physical activity. These benefits include being in good health which can also lead to becoming employed (U.S. Department of Health and

Human Services, 2005). While there has been studies conducted on sport preferences amongst persons with disabilities (Vute & Urnaut, 2009) and the benefits of participating in sport and physical activity, there has been little research on the benefits of participation in sport for students with ASD.

For a child with ASD, participating in sport can improve their overall health related fitness as well as decrease their stereotypical behaviors (Yilmaz, et al., 2004). Some researchers (Fragala-Pinkman et al., 2011) suggest that children with ASD should participate in swimming to improve health conditions and improve swimming skills. Improving swimming skills is a major concern with the increasing number of children with ASD wandering from their homes and endangering themselves. After reviewing the literature, there appears to be a lack of research on sport recommendations from professionals who work with students with ASD and the benefits of sport participation for high school students with ASD. Further research needs to be conducted to provide communities, school districts, and parents with information to get children with ASD involved in sport and physical activity.

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