



# Effects of Equine Assisted Activity on Children and Adolescents with Autism Spectrum Disorder

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## INTRODUCTION

Autism spectrum disorder (ASD) encompasses a spectrum of disorders which are characterized as having impaired communication skills, social skills and repetitive behaviors or body movements.<sup>1</sup> Since every individual with ASD presents with different challenges, treatment modalities for ASD are quite diverse. Equine Assisted Activity (EAA), including therapeutic horseback riding (THR), is a form of animal assisted therapy provided by a riding instructor that is now being utilized for individuals with ASD.<sup>2</sup> It is the emphasis of control, focus, sensory management, attention and both verbal and nonverbal communication that are at the core of the therapy. It is thought that contact with horses stimulates a psychological, social and physiological response in the children and adolescents.<sup>3</sup> This study examines the use of EAA and the effect it has on children and adolescents with ASD, including their behavior and level of adaptive functioning on both a short term and long term basis.

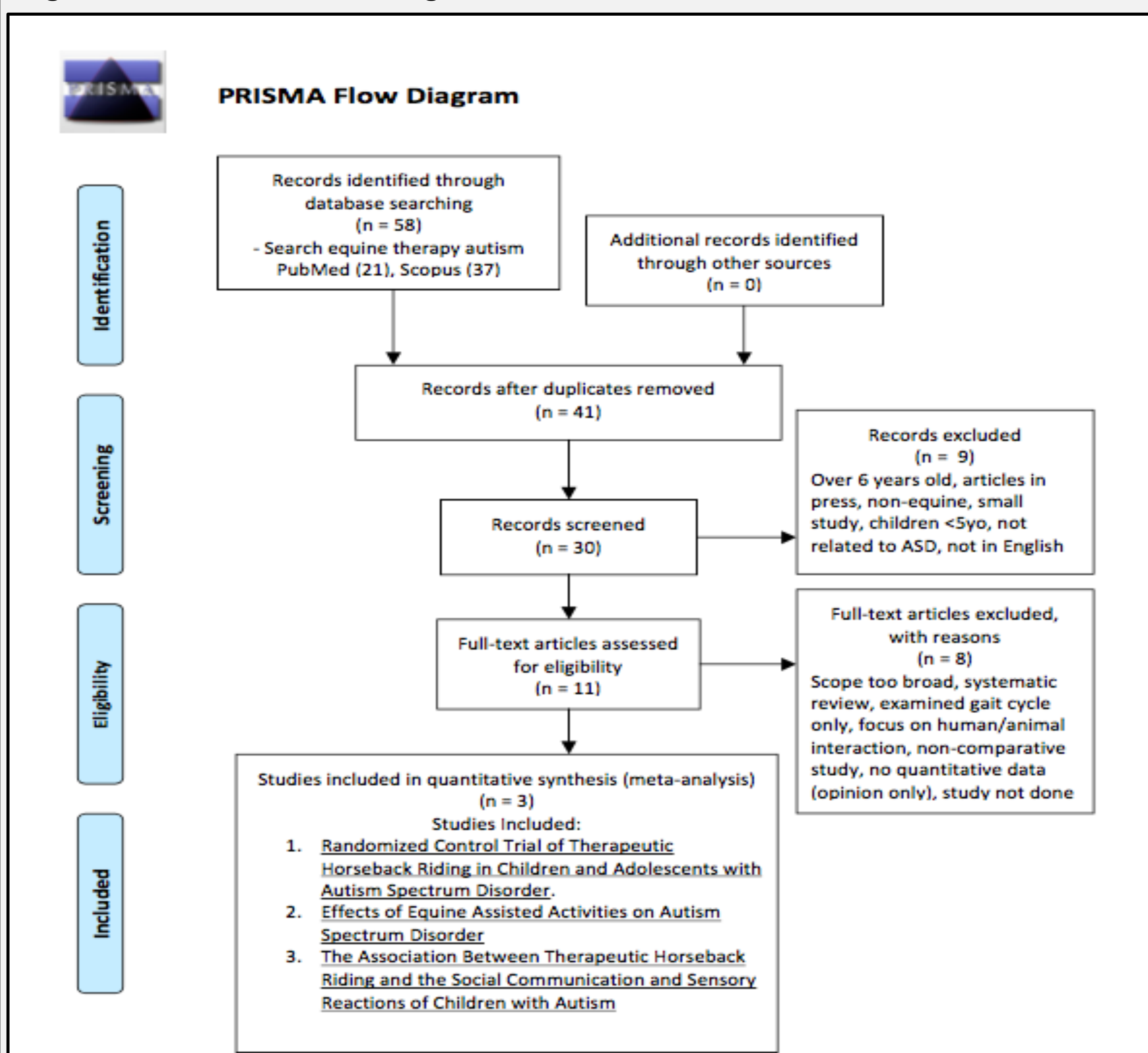
## CLINICAL QUESTION

P	POPULATION	Children and adolescents with autism spectrum disorder
I	INTERVENTION	Equine assisted activity
C	COMPARISON	Children and adolescents with autism not participating in equine assisted therapy
O	OUTCOME	Improved behavior and adaptive functioning

**Clinical Question:** In a population of children and adolescents with ASD, does EAA improve adaptive functioning and behavior compared to children with ASD not engaged in EAA?

## METHODS

Figure 1.0 PRISMA Flow Diagram



## RESULTS

Table 1.0 Comparison of All Three Studies

Study	Gabriels et al <sup>4</sup>	Ward et al <sup>5</sup>	Lanning et al <sup>6</sup>
Participants, N	127	21	25
Patient population	Children and adolescents ages 6-16 with a prior diagnosis of ASD	Children grade levels between Kindergarten to 5th grade with a prior diagnosis of ASD	Children between the ages of 5-15 with a prior diagnosis of ASD
Gender M/F	49/9	15/6	EAA= 9/4 Social Circles= 12/0
Primary Investigation	The effects of THR vs. only BA	The effects of THR- no control	The effects of EAA vs. participating in social circles
Duration of study	10 weeks	30 weeks	12 weeks
Study strengths	Larger study size; multiple scale measurements used	Longer study duration	Different domains measured to assess the participants behavior
Study limitations	Short duration of study; more males than females; 11 children dropped from the study; possible caregiver bias as they were not blinded to study	Small sample size; more males than females; no control group; all data generated from one source	Short duration of study; more males than females; child's baseline level of functioning not discussed; clerical error during week 12

N=total number (of participants) in study; M= male; F=female; ASD= autism spectrum disorder; THR= therapeutic horseback riding; BA= barn activity, EAA= equine assisted activity

Table 2.0 Scale Measurements For All Three Studies<sup>4,5,6</sup>

Study #1: <i>Randomized Controlled Trial of Therapeutic Horseback Riding in Children and Adolescents With Autism Spectrum Disorder. Gabriels et al.</i> <sup>7</sup>	
PPVT-4	Peabody Picture Vocabulary Test, 4th edition
SALT	Systematic Analysis of Language Transcripts
BOT-2	Bruininks-Oseretsky Test of Motor Proficiency, 2nd edition
SIPT	Sensory Integration and Praxis Test
VABS-II	Vineland Adaptive Behavioral Scales, 2nd edition
SRS	Social Responsiveness Scale
ABC-C	Aberrant Behavior Checklist- Community
Study #2: <i>The association between therapeutic horseback riding and the social communication and sensory reactions of children with autism. Ward et al.</i> <sup>8</sup>	
GARS-2	Gilliam autism rating scale
SPSC	Sensory profile school companion
Study #3: <i>Effects of Equine Assisted Activities on Autism Spectrum Disorder.</i> <sup>9</sup>	
PedsQL	Pediatric Quality of Life 4.0
CHQ	Child Health Questionnaire

Table 3.0 Study #1: Statistically Significant Results<sup>4</sup>

Measurement	Ave Change (THR)	Ave Change (BA)	P value	Effect Size
ABC- Irritability	-6.3	-2.6	0.02	0.50
ABC- Hyperactivity	-7.5	-2.9	0.01	0.53
SRS- Social Cognition Impairment	-2.4	-0.5	0.05	0.41
SRS- Communication Impairment	-6.1	-1.2	0.003	0.63
SALT- # of different words used	15.7	-3.7	0.01	0.54
SALT- # of words used	40.5	-14.9	0.01	0.54

Figure 2.0 Study #2 Results: Statistically significant changes in GARS-2 and SPSC subscales between Week 30 and Pretherapy scores (p < 0.05)<sup>5</sup>

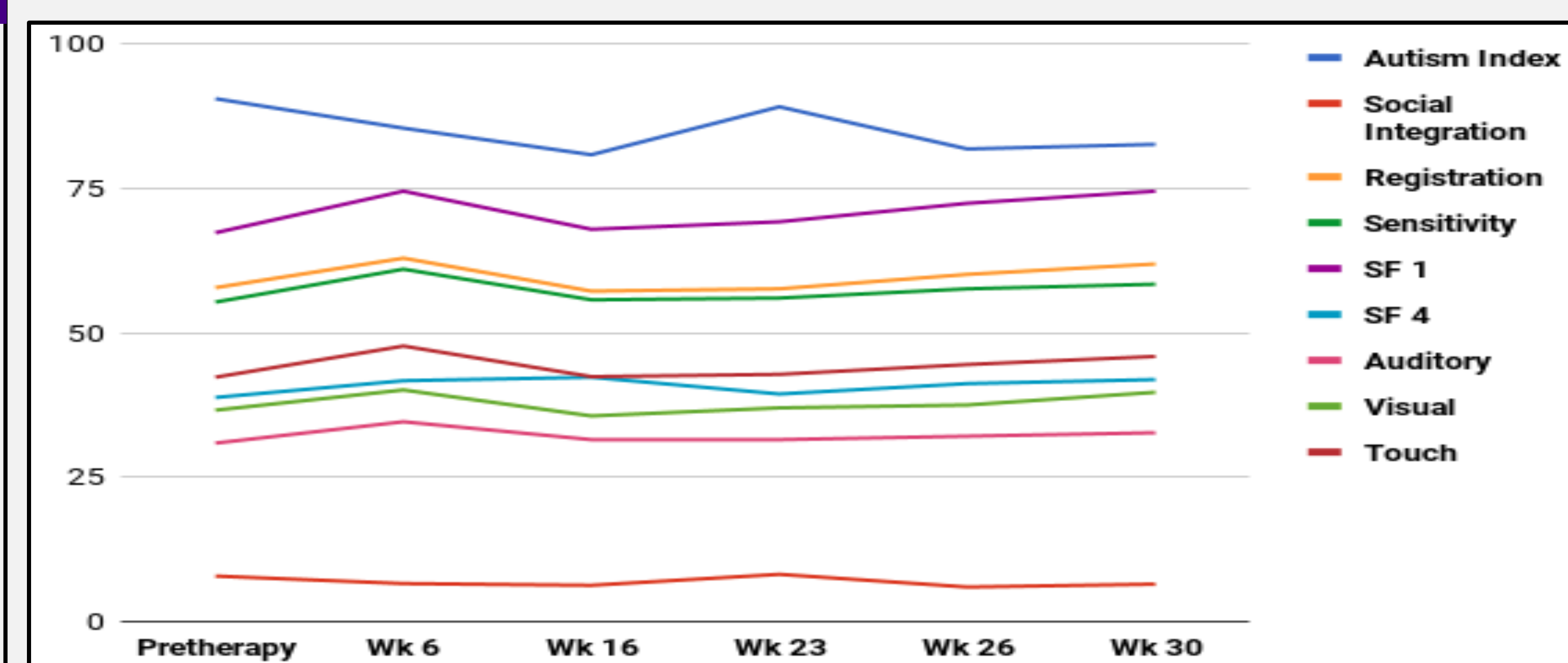
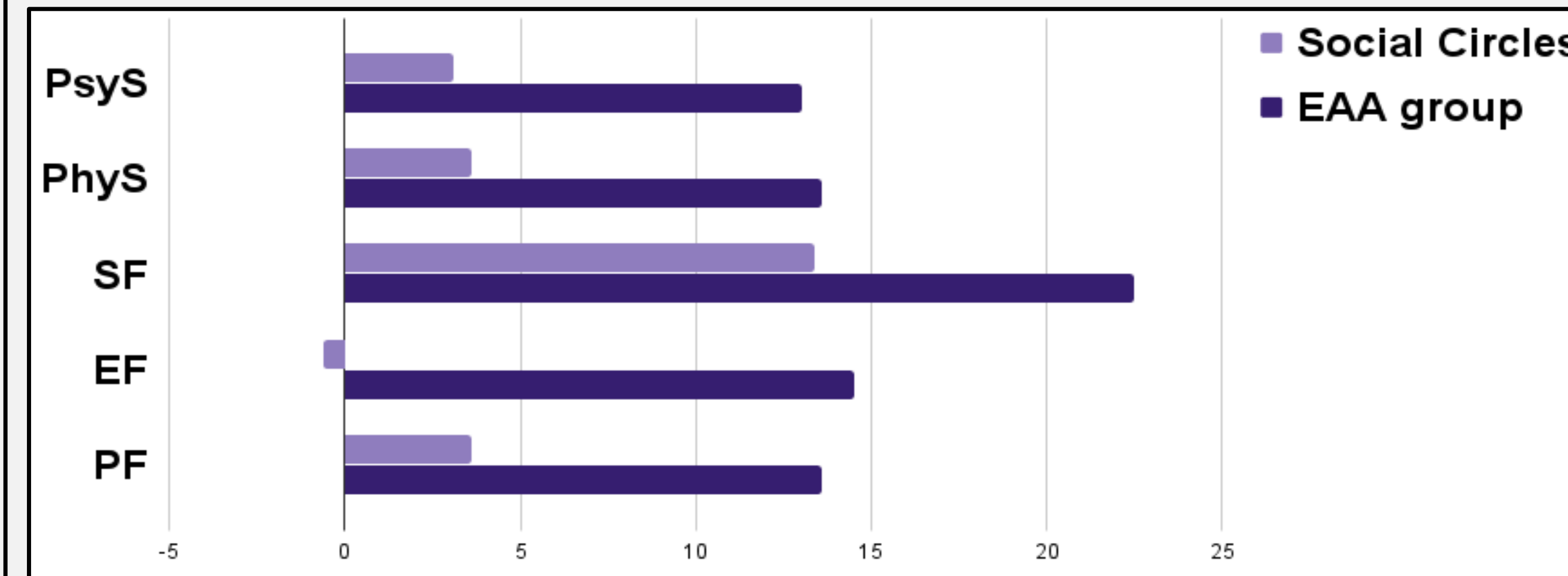


Figure 3.0 Study #3 Results: Social Circles and EAA group change from baseline in quality of life domains using parent responses PedsQL at week 6. EAA group showed statistically significant change (p < 0.05)<sup>6</sup>



## CONCLUSION

From 2002 to 2010, ASD prevalence increased by nearly 123%.<sup>7</sup> As more children are being diagnosed with ASD, and because of the diverse nature of the disorder, a broad variety of treatment modalities have become available. EAA has shown improvement in children and adolescents' behavior, and cognitive, social and emotional functioning. However, due to the limited number of studies available and the small sample sizes of published studies (including the studies in this review), there are still many unanswered questions about the effectiveness of EAA as a long term therapy option. Larger scale studies with an even distribution of males to females should be conducted to determine both the short and long term effects EAA has on behavioral and adaptive functioning in children and adolescents with ASD.

## ACKNOWLEDGEMENTS

We would like to thank Dr. Erika Kancler, Carolyn Schubert, and JMU's Communication Center for their assistance in this Capstone Project.

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