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ORIGINAL ARTICLE



Influence of physical activity on the health-related quality of life of young adults with and without autism spectrum disorder

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ABSTRACT

Background: Health-related quality of life constructs has been used to understand the multiple dimensions (i.e., physical health, psychological, environment and social relationships) that affect a person's health status. In order to improve health-related quality of life for young adults, it is important to understand the factors that influence each dimension. The purpose of this paper was to examine the influence of the presence of autism spectrum disorder and physical activity on the multiple domains of health-related quality of life for young adults.

Methods: Three-hundred and twenty participants, including young adults with ASD, completed a questionnaire about their physical activity and health-related quality of life.

Results: Five multiple regressions revealed that the presence of autism spectrum disorder significantly predicted overall health-related quality of life, the physical health domain, psychological domain, and the environment domain. Additionally, physical activity significantly predicted each domain and overall health-related quality of life regardless of the presence of autism spectrum disorder.

Conclusion: Practitioners should recognize the limitations that individuals with autism spectrum disorder may experience regarding their health-related quality of life, and utilize physical activity as a tool for improving health-related quality of life.

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Autism spectrum disorder; health; physical activity; quality of life; young adults

► IMPLICATIONS FOR REHABILITATION

- In order to address an individual's overall health, practitioners must consider multiple dimensions of health-related quality of life.
- Autism spectrum disorders influence how people perceive multiple dimensions of their health.
- Physical activity is a tool for improving perceptions of the multiple dimensions of health for individuals with and without autism spectrum disorders.

Introduction

Health-related quality of life (HRQOL) has been used to measure health outcomes to evaluate the effectiveness of services and research [1]. HRQOL is a multidimensional construct based on an individual's subjective view of their health (i.e., physical, mental and social well-being) [2]. Measurements based on HRQOL may help practitioners identify predictors of a person's optimal well-being [3]. For example, although an individual may be in good physical condition, they may struggle with psychological issues that influence their mental health and may lead to physical health problems in the future. Therefore, HRQOL is important to track in order to improve research and treatment approaches [3].

One population that is in need of interventions focused on improving their overall health and HRQOL is young adults [4]. Young adults often experience deficits in their health, as risky behaviors such as binge drinking, drug use and sedentary activities often increase in prevalence from adolescence to adulthood. These new habits, which can lead to negative health outcomes, may be influenced by the transitions that many young adults experience such as moving away from home or starting a new job. Zahran, Zack, Vernon-Smiley and Hertz [5] examined health data from the 2003, 2004 and 2005 Behavioral Risk Factor

Surveillance System surveys for young adults. Results indicated that young adults perceived their physical health to be poor an average of two days a month and perceived themselves to experience problems related to mental health an average of four days per month. Additionally, there are inconclusive reports on the effect of an individual's sex on HRQOL. HRQOL measures may help provide practitioners some insight into the multiple dimensions that can influence how young adults perceive their health.

Another group that experiences health disparities [6], which may negatively influence their HRQOL, is young adults with autism spectrum disorders (ASD). The prevalence of ASD has substantially increased within the past few decades [7]; therefore, additional research is needed to understand the interests and needs of this group. ASD affects an individual's social communication and interactions as well as their patterns of behavior and interests [8]. Individuals with ASD are more likely than their peers to experience increased rates of anxiety [9,10] and depression [11]. HRQOL measures may be a useful tool for identifying areas of need for young adults with ASD, but current literature shows mixed results regarding the association between ASD and HRQOL [12–14]. For example, Renty and Roeyers examined the HRQOL of 58 adults with ASD and reported perceived support significantly

influenced participants' HRQOL, but characteristics specific to the diagnosis of ASD did not [14]. However, Biggs and Carter [12] examined the HRQOL of adolescents and young adults with ASD and reported that characteristics related to ASD did significantly influence participants' HRQOL. Therefore, it is important to control for the impact of other factors, such as physical activity, to gain a better understanding of each HRQOL domain for young adults with ASD.

Promoting HRQOL is the basis for one of the four main goals included in Healthy People 2020 [2]. Previous studies have linked regular participation of physical activity with improvements in HRQOL [15,16]. Anokye et al. [15] examined this relationship utilizing both subjective and objective physical activity measures among 5537 adults and concluded that increased physical activity levels were associated with higher HRQOL scores. They utilized the EuroQol-5 Dimensions HRQOL Scale, which includes the five dimensions of mobility, self-care, usual activities, pain/discomfort and anxiety/depression. However, they only reported an overall HRQOL value that was based on the mean score of each dimension combined. Despite their outstanding contribution, Anokye et al.'s results do not show how an individual perceives their mobility, self-care, usual activities, pain/discomfort or anxiety/depression [15]. Many previous studies view and/or treat HRQOL as a unidimensional construct and do not address its multidimensional nature [17–20]. When only a total score is reported to describe the current status of HRQOL, it may not be representative of each dimension and therefore may not provide the information practitioners need to understand the deficits that individuals may be experiencing regarding perceptions of their health. In order to have an in-depth understanding on the relationship between physical activity and HRQOL, it is important to examine the multiple dimensions of HRQOL.

Physical activity has been shown to play a key role in enhancing the well-being of young adults, however additional research is needed to observe if physical activity actually predicts each domain of HRQOL. Understanding how different variables predict each domain of HRQOL will help to provide more useful information for enhancing health promotion efforts. Therefore, the purpose of this research was to examine the influence of the presence of ASD and physical activity on the multiple domains of HRQOL of young adults.

Methods

Participants

Three-hundred and twenty young adults (177 females, 138 males, and five participants did not disclose their sex) between the ages 18–35 participated in this study by completing an online questionnaire. Among the 320 participants, 143 were diagnosed with ASD. The average age was 25.39 years ($SD = 4.5$) for participants with ASD, and 24.22 ($SD = 5.1$) for participants without a diagnosis of ASD. Eighty-six percent of the participants without ASD reported continuing education past high school, compared to 58% of participants with ASD. The sample included people from over 23 different states, representing each region of the United States. Individuals diagnosed with ASD specified their diagnoses as Asperger syndrome (45%), autism (34%), autistic disorder (8%), pervasive developmental disorder – not otherwise specified (2%), childhood disintegrative disorder (1%) and 10% were unsure of their exact diagnosis. All participants included in data analysis met the inclusion criteria for this study: (a) between the ages of 18–35, and participants in the ASD group also confirmed that they (b) received a diagnosis related to ASD.

Instruments

Participants completed an online questionnaire based on their (a) demographics, (b) physical activity level and (c) HRQOL. Demographic information was assessed through seven or eight items depending on the presence of ASD. All individuals responded to questions about their age, sex, ethnicity, race, education status, current employment status and ZIP code. Additionally, individuals with ASD were asked to identify their diagnosis related to ASD.

HRQOL was measured using the United States version of the shortened World Health Organization Quality of Life scale titled: WHOQOL-BREF [21]. The shortened version of the World Health Organization Quality of Life scale includes items concerning four different domains. Each domain is based on a different number of questions. The physical health domain includes seven items, the psychological one six, the environment domain eight, and the social relationships domain three. This leads to unequal weighting of the domains; therefore, the WHO recommends using transformed scores [21]. Transformed scores are based on converting the sum of raw scores for each domain and placing them on a scale from 0–20, with a higher score representing better perceived health. The overall HRQOL score was calculated by combining the transformed score of each domain. Reliability analyses reported adequate scores for total HRQOL ($\alpha = 0.82$), and each HRQOL domain including physical health ($\alpha = 0.81$), psychological ($\alpha = 0.78$), environment ($\alpha = 0.81$) and social relationships ($\alpha = 0.75$).

Physical activity was measured with the Godin Leisure-Time Exercise Questionnaire [22]. This questionnaire, which includes three items, measures the intensity and frequency of physical activity. The Godin Leisure-Time Exercise Questionnaire has been used by many previous studies to measure physical activity [19,23–27]. This scale multiplies the number of times an individual engages in each intensity level (mild, moderate and strenuous) of exercise by the corresponding metabolic equivalent of the task value (three, five, and nine respectively). For example, if an individual engages in a moderate physical activity three times during a seven-day period for at least 15 min each time, they would have a total leisure-time activity score of 15. An individual who engaged in strenuous activities five times for at least 15 min during a seven-day period and an individual who participated in light intensity activities 15 different times for at least 15 min during the week would both have a total physical activity score of 45 [28]. The total physical activity score utilized for this study was determined following the recommendations for calculating a weekly leisure activity score from the 1997 Godin and Shephard questionnaire [22].

Procedures

Participants were recruited through multiple strategies. Participants with ASD were recruited through three different methods, including: (1) organizations that specifically work with individuals with ASD, (2) social media sites related to ASD, and lastly (3) Qualtrics Panels. Five percent of the participants with ASD were recruited through social media (Facebook) sites, 25% were recruited through organizations for individuals with ASD, and 70% were recruited through Qualtrics Panels. Qualtrics Panels is a survey program, managed by Qualtrics Software Company that helps researchers target individuals who meet their inclusion criteria. Qualtrics Panels forwards an online link to the questionnaire through a specialized survey distribution company to the target population. The survey distribution company then sends

their own invitation that includes the link to the online questionnaire for potential participants. Three separate one-way ANOVAs were utilized to compare differences between the participants with ASD that were recruited from each source and no significant differences were found regarding type of diagnosis $F(3, 130) = 0.25$, $p = 0.86$, current employment $F(3, 138) = 1.23$, $p = 0.30$, or highest level of education $F(3, 139) = 2.039$, $p = 0.07$.

Participants without ASD were recruited through two different methods, including physical activity courses at a large university in the Northwest region of the United States and social media. Sixty-six percent of the participants without ASD were recruited through the physical activity courses, and 34% were recruited through social media. Two separate one-way ANOVAs were used to compare differences between the participants recruited through the physical activity courses and social media. The results indicated significant differences between the two groups regarding current employment $F(1, 174) = 74.69$, $p > 0.01$ and highest level of education $F(1, 174) = 13.04$, $p > 0.01$. This was expected since participants recruited through the physical activity courses were current students.

Data collection methods, except for collection through Qualtrics Panels, followed similar procedures. As addressed in the participant section, participants were recruited through four different sources, including: (1) ASD organizations, (2) Qualtrics Panels, (3) social media and (4) physical activity classes at the large university in the Northwest region of the United States. ASD organizations distributed an invitation to participate in the questionnaire and a web-based or a paper version of the questionnaire. After the web-based questionnaire was sent for the first time, two follow up invitations were sent approximately 10 and 20 days later. For the paper survey, participants were sent one follow-up invitation approximately 10 days following the initial invitation. Qualtrics Panels partnered with a specialized questionnaire distribution company to forward a link to the web-based questionnaire. The questionnaire distribution company sent one invitation that included the link to the web-based questionnaire for young adults who identified as having a diagnosis related to ASD. Additionally, invitations, which included a link to the web-based questionnaire, were posted on the social media pages of various organizations focused on young adults with and without ASD. Two follow-up invitations were posted on each organization's social media page approximately 10 days apart. Lastly, the questionnaires were distributed one time through a listserv for individuals enrolled in physical activity classes at the large university in the Northwest region of the United States. All questionnaires included an attached explanation of research. A non-response rate is unavailable because it is unknown how many individuals received an invitation to participate in the study from the listed sources. All individuals who completed the questionnaire consented to participate in the study. Testing procedures were approved through the investigator's Institutional Review Board.

Data analysis

Preliminary analysis

A total of 422 (169 participants with ASD, 253 participants without ASD) surveys were returned. Because bias may be present, participants who were missing 10% or more of responses were deleted [29]. This resulted in the removal of 100 surveys (24 participants with ASD, 76 participants without ASD) from the data analysis. Additionally, two surveys were removed because two participants with ASD did not meet the inclusion criteria for age. Final data analyses included a total of 320 participants (143 participants with

ASD and 177 without ASD). Descriptive statistics were analyzed to describe the physical activity and HRQOL levels of the participants. After deleting 102 surveys, 38 surveys still contained an average of 4% percent missing values. Listwise deletion is often used to handle missing data, however this may lead to a reduction in power, and potentially an increase in standard errors [29]. Therefore, maximum likelihood, which replaces missing data based on values that are most likely to occur [29], was used to replace the remaining missing data. Prior to replacing the remaining missing values, Little Missing Completely at Random's test was conducted [30]. The results indicated that data was missing at random $X^2(24, N = 320) = 22.96$, $p = 0.53$.

To determine the normality of the data, the Kolmogorov-Smirnov and Shapiro-Wilk test were utilized. Results for each test indicated that the data were not normally distributed. Results for total physical activity were Kolmogorov-Smirnov (313) = 0.13, $p < 0.01$ and Shapiro-Wilk (313) = 0.80, $p < 0.01$, physical health: Kolmogorov-Smirnov (317) = 0.12, $p < 0.01$, and Shapiro-Wilk (317) = 0.94, $p < 0.01$, psychological: Kolmogorov-Smirnov (319) = 0.18, $p < 0.01$, and Shapiro-Wilk (319) = 0.93, $p < 0.01$, environment: Kolmogorov-Smirnov (319) = 0.16, $p > 0.01$, and Shapiro-Wilk (319) = 0.95, $p > 0.01$ and social relationships: Kolmogorov-Smirnov (314) = 0.13, $p > 0.01$ and Shapiro-Wilk (314) = 0.96, $p > 0.01$. Since the assumption of normality was violated, a bias-corrected bootstrapping test was employed during the primary analysis [31].

Primary analysis

The current study utilized five separate multiple regressions using bias-corrected bootstrapping technique from 1000 resamples. The same two independent variables, total physical activity level and presence of ASD, were used for each analysis. The dependent variable for the first multiple regression was overall HRQOL, followed by each domain of HRQOL (physical health, psychological, environment and social relationships). All analyses were done utilizing IBM SPSS Statistics 23 (Chicago, IL) [32]. Significance level was set at 0.05.

Results

Participants spent the majority of their time in mild intensity physical activities ($\bar{x} = 4.32$, $Mdn = 3.00$, $SD = 4.74$, range = 0–54), followed by moderate ($\bar{x} = 3.66$, $Mdn = 3.00$, $SD = 4.49$, range = 0–45) and strenuous activities ($\bar{x} = 2.58$, $Mdn = 2.00$, $SD = 2.51$, range = 0–20) during a typical week. Examples of physical activities included but were not limited to yoga, golf and walking for mild intensity activities; tennis, easy bicycling and skiing for moderate intensity physical activities; and running and soccer and vigorous swimming for strenuous intensity physical activities. Young adults with ASD reported that they engaged in mild intensity activities an average of 3.55 ($Mdn = 3.00$, $SD = 3.65$, range = 0–20) times per week, followed by moderate intensity activities 2.88, ($Mdn = 2.00$, $SD = 3.78$, range = 0–30) times, and strenuous activities 1.99 ($Mdn = 1.50$, $SD = 2.55$, range = 0–20) times during a typical seven-day period. Based on the same scale, the reported averages for young adults without ASD included 4.94 ($Mdn = 4.00$, $SD = 5.43$, range = 0–45) times for mild intensity activities, 4.27 ($Mdn = 3.00$, $SD = 4.90$, range = 0–54) times for moderate intensity activities, and 3.10 ($Mdn = 3.00$, $SD = 2.37$, range = 0–13) times for strenuous intensity activities. Light, moderate, and strenuous activities were each multiplied by their respective metabolic equivalent of the task value and then combined to create the total physical activity. The average total

physical activity score for participants with ASD was 45.80 (Mdn 36.00, SD=46.78), and the average for participants without ASD was 64.10 (Mdn 57.00, SD=42.27).

In order to identify influences on the multiple dimensions of HRQOL, each domain was examined independently. Young adults with ASD rated the environment domain ($\bar{x}=14.20$) as their highest met HRQOL domain, followed by social relationships ($\bar{x}=13.45$), physical health ($\bar{x}=13.41$), and lastly the psychological domain ($\bar{x}=12.58$). Results for young adults without ASD differed, as physical health ($\bar{x}=16.08$) was the highest met domain, followed by perceptions of the environment ($\bar{x}=16.05$), psychological well-being ($\bar{x}=14.64$) and social relationships ($\bar{x}=14.61$). The mean HRQOL score for young adults with ASD was 53.54 (Mdn 55.00, SD=11.40) and the mean HRQOL score for participants without ASD was 61.35 (Mdn 62.00, SD=7.78).

The results of multiple regression indicated that the presence of ASD and physical activity, accounted for approximately 17% of their overall HRQOL ($R=0.42$, $p<0.01$). ASD status and physical activity significantly predicted overall HRQOL, $t(315)=-6.32$, $p<.001$ and $t(315)=3.31$, $p=0.001$, respectively. Bias-corrected bootstrap confidence intervals (CI) also indicated that ASD status and physical activity were significant predictors of HRQOL. Confidence intervals both lower and upper boundary were below zero (95% CI: -9.23 to -5.06) for ASD status and above zero (95% CI: 0.02 to 0.06) for physical activity and, indicating significant relationships. Table 1 provides additional details.

The main purpose of this study was to examine if different variables predict each dimension of HRQOL. Twenty percent of the physical health domain ($R=0.45$, $p<0.01$), was explained by the presence of ASD and physical activity level. Results also indicated that ASD status $t(315)=-8.15$, $p<0.01$ and physical activity $t(315)=1.98$, $p<0.05$ were significantly associated with the physical health domain. Participants' ASD status and physical activity level explained 14% of the psychological domain ($R=0.37$, $p<0.01$). ASD status and physical activity were significant predictors of the psychological domain, $t(315)=-5.54$, $p<0.01$, $t(315)=3.37$, $p<0.001$. Approximately, 15% of the environment domain ($R=0.38$, $p<0.01$) was explained by ASD status and physical activity level. ASD status $t(315)=-5.98$, $p<0.01$ and physical

activity $t(315)=2.96$, $p<0.01$ were significant predictors of the environment domain. Lastly, approximately five percent of the social relationships domain ($R=0.22$, $p<0.01$) was explained by ASD status and physical activity level. However, only physical activity $t(315)=2.24$, $p<0.05$ was significantly related to the social relationships domain. Multiple regression values based on bias-corrected bootstrapping are provided in Table 2.

Discussion

This study aimed to explore how various factors are associated with the multiple domains of HRQOL. Consistent with the majority of findings on ASD and HRQOL [13,33], ASD status was found to significantly and negatively predict participants' overall HRQOL. However, the current results suggest that the presence of ASD does not affect every domain. Therefore, only utilizing the overall score to describe HRQOL may be inappropriate. Examining each domain will better inform practitioners of the strengths and limitations that individuals face in regards to their HRQOL.

As the results show, a diagnosis of ASD significantly predicted participant's overall HRQOL, physical health, psychological domain and the environment domain. Past studies have provided multiple explanations for the observed low HRQOL scores for this population. Staples and Reid [34] highlighted movement skill impairments in individuals with ASD, which may negatively influence their ability to engage in certain activities and therefore their ability to improve their physical health or their perceived competence in successfully utilizing the environment. Additionally, young adults with ASD are more likely to experience depression [11], and anxiety [35], which may decrease psychological well-being.

Surprisingly, ASD did not predict participants' perceptions of their social relationships. This finding was unexpected since individuals with ASD experience deficits in social communication [36], and literature has emphasized the poor quality of social relationships within this group [11]. One potential explanation for why ASD did not influence participants' perception of social relationships is that the deficits that individuals with ASD have regarding social communication [36] may limit the importance they place on social interactions. For example, Bauminger, Shulman, and Agam [37] compared how children with and without ASD viewed images of friendship. Children with ASD were able to identify pictures of friendship, but did not attribute affective characteristics to the picture. A child without ASD was more likely to describe two friends sitting down as "two friends that were very happy", while a child with ASD was more likely to describe the situation as "two people sitting" [37]. Another possible reason for the lack of significance is that the HRQOL instrument was not sensitive enough for individuals with ASD. However, this sample's specific reliabilities indicate adequate internal consistency for each domain [38], including the social relationships domain ($\alpha=0.75$).

This study also aimed to examine the influence of physical activity on HRQOL. The results of this study indicate that physical

Table 1. Predictors of overall HRQOL.

Variable	Overall HRQOL	
	B	95% CI
Constant	65.95	62.60, 69.90
ASD	-7.05*	-9.23, -5.06
PA	0.04**	0.02, 0.06
R ²	0.17	
F	32.73**	

N = 320. CI = Bias-corrected accelerated confidence interval. * $p<0.05$.

** $p<0.01$. BCa CI shows a significant relationship when the upper and lower CI are on the same side of zero.

PA: physical activity.

Table 2. Predictors of HRQOL domains.

Variables	Physical Health		Psychological		Environment		Social Relationships	
	B	95% CI	B	95% CI	B	95% CI	B	95% CI
Constant	18.19	17.26; 19.03	15.69	14.62, 16.81	17.13	16.18, 18.23	14.93	13.55; 16.61
ASD	-2.54**	-3.19; -1.85	-1.84	-2.52, -1.16	-1.69**	-2.22, -1.16	-0.93	-1.86; -0.20
PA	0.007*	0.01; 0.01	0.01**	0.01, 0.02	0.01**	0.003, 0.015	0.01*	0.00; 0.02
R ²	0.20		0.14		0.14		0.04	
F	39.83**		25.65**		25.69**		6.43**	

N = 320. 95% CI represent values from a bias corrected accelerated confidence interval. Upper and lower CI values on the same side of zero indicate a significant relationship. $p<0.05$. ** $p<0.01$. PA: physical activity.

activity positively influences the physical health, psychological, social-relationships, and environment domains for young adults. As expected, the overall HRQOL score was also positively predicted by physical activity, which supports the results of previous studies [15,20]. This study adds evidence that physical activity interventions may play an important role in addressing multiple health concerns of young adults, and is useful for health practitioners who may want to develop domain-specific programming to positively influence a person's health.

Although these results do not explain how the relationship between physical activity and each HRQOL domain occurs, there are many possible mediators. Findings from the current study show an association between physical activity and an individual's perception of the HRQOL environment domain, which is consistent with previous research [39] that has highlighted an association between the environment and an individual's physical activity level. Physical activity may also provide the opportunity for people to develop friendships [40], build self-esteem [41], and improve their ability to perform everyday tasks [42], which can increase perceptions of the social relationships domain, psychological domain, and physical health domain of HRQOL respectively.

While this research provides evidence that higher physical activity levels are associated with better HRQOL scores, additional research is needed. One potential future study may be to examine the effects of the intensity of physical activity on specific domains of HRQOL. The current physical activity guidelines state that individuals should engage in at least 150 min of moderate intensity physical activity or 75 min of vigorous intensity physical activity each week in order to gain substantial health benefits [43]. These guidelines do not include recommendations for light/mild intensity physical activity, but specify that any increase in physical activity will produce health benefits [2]. Multiple studies have reported that individuals who engage in increased moderate or vigorous intensity physical activities are more likely to rate their HRQOL to be high [18,44]. However, these conclusions are often based on comparing people who engage in moderate and vigorous activities to people that are not regularly active or are considered to be inactive [44]. Lustyk, Widman, Paschane, and Olson addressed the lack of information on mild intensity physical activity and compared the correlations between strenuous, moderate, and mild physical activities and quality of life [45]. Results suggested participation of mild intensity physical activities with higher frequencies had the strongest influence on quality of life, but the study was based on an overall quality of life score. Therefore, it is still unclear how the intensity level of physical activity contributes to each domain of HRQOL.

Based on the nature of this type of research, this study is not without limitations. A limitation of this study may be that the possible bi-directional relationship between physical activity and HRQOL was not examined. For example, an individual who feels more confident about their physical health and sleeps for the recommended amount of time may be more likely to have the energy to engage in an activity. Intervention studies that include a control group are needed to provide further information about the relationship between physical activity and HRQOL. The majority of studies done on this topic are based on cross-sectional analyses [16] and provide limited information on how HRQOL may influence physical activity. Another limitation of this study is that the researchers were unable to determine the number of people in total that the questionnaire was administered to, which did not allow for a response rate to be calculated. Lastly, due to the fact that all data was anonymous, we were unable to collect sufficient proof related to the actual diagnosis of each individual with ASD. We had multiple questions related to diagnosis, however we did

not require proof of diagnosis. This method allowed us to reach more participants, which improved the overall strength of this study.

Suggestions for practice

Results revealed that when the presence of ASD and an individual's sex were controlled for, physical activity positively predicted each domain of HRQOL. Therefore, physical activity may provide a cost-effective approach for rehabilitation and health promotion efforts aimed at improving the multiple domains of HRQOL for young adults (e.g., physical health, psychological health, satisfaction with environment, and social relationships). This information is beneficial to rehabilitation and health programs that aim to be inclusive of young adults with and without ASD. However, since ASD had such a significant impact on participants' perceptions of physical health, psychological well-being, and the environment, extra efforts are needed. For example, practitioners may need to pay special attention to how they structure physical activity programs in order to ensure that they provide a positive environment for individuals that may struggle within a traditional setting (i.e., crowded settings).

Conclusions

The results of this study suggest that ASD negatively predicts an individual's overall HRQOL, and the domains of physical health, psychological health, and the environment. However, the results also provide evidence that physical activity positively predicts the multiple domains of HRQOL for young adults. Therefore, although young adults with ASD may struggle to maintain a higher perceived HRQOL, physical activity can be utilized as a tool to help improve how they perceive their physical and psychological health, their social relationships, and their environment.

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Disclosure statement

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