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Learning to be Fit: Social change for individuals with cognitive differences through organized team based sports

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Abstract

This project investigated the importance and impact of physical activity on the lives of individuals with special needs. Two three-person focus groups, one composed of individuals involved in the Special Olympics and one of individuals not involved in the Special Olympics, participated in the study. Data was collected by videotaping each group's process during a 20-minute self-directed session that included assigning roles and responsibilities in order to answer 10 semi-structured interview questions. Approach to assigning roles, organization of the process, and answers to the interview questions were analyzed and member checked. This study found that individuals involved in the Special Olympics displayed more speaking turns, episodes of problem solving, and engagement in self and group regulation for task completion. Answers to the interview questions reflected heightened awareness of eating good food and being physically active. This suggests that participation in team activities may create an awareness of social processes that extend beyond sports.

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Physical activity and being healthy is a topic that receives a good deal of attention. Research in this area can come in many forms: results of exercise on academics (Sardinha, Marques, Minderico, Palmeira, Martins, Santos, & Ekelund, 2016), the effects it has on aging (Clark, Parisi, Kuo, & Carlson, 2016), and physical activity while pregnant (Esteban-Corneio, Martinez-Gomez, Teiero-Gonzalez, Izquierdo-Gomez, Carbonell-Baeza, Castro-Pinero, & Veiga, 2016), to name a few. There are numerous known benefits, but physical activity's effects on those who are neuro-atypical can be overlooked. The Special Olympics is a worldwide organization that gives persons with special needs an opportunity to participate in exercise as well as connect with others having similar or different disabilities. The focus of this project was to conduct service learning research using individuals involved in the local Special Olympics organization in order to investigate the effects of organized team based physical activity for persons with special needs. Specifically the study investigated differences in social-cognitive processes for those who are involved in the Special Olympics and those who are not.

The uniqueness of this study comes from the idea that rather than doing research strictly about those with special needs, they will be involved in the research, an approach similar to the Participatory Action Research (PAR) used by the Special Olympics (Special Olympics Research Overview). PAR is research designed to answer questions held by the individuals with special needs. By doing

this, these individuals are being transformed from simply the subjects of research to being active participants while assisting in research.

Review of the Literature

This review of the literature will cover the importance of physical activity for all people, including those with special needs. It will lead to the specific questions of the study that seeks to understand physical activity as a health activity as well as a social and emotional experience for those with special needs.

The population in which this research focuses on are individuals considered neuro-atypical. In contrast to the term neurotypical, which is used frequently in the Autism community, the term neuro-atypical in the medical community refers to individuals with neurological structures that are characteristically different. This can include, but is not limited to: Down Syndrome (DS), Autism Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD), and Intellectual Disability (ID).

Benefits of Physical Activity

Numerous articles state the extreme benefits of being physically active in both typically developing individuals and those with developmental disorders. In a study performed by McKenzie, Sallis, Kolody and Faucette (1997) (as cited in Buck, Castelli, Erwin, & Hillman, 2007) the relationship between academic achievement and physical activity was observed. The findings show that even when time is taken away from academic courses and replaced with physical education, academic performance was not impaired. Even though there are positive trends in research for academic performance from physical activity, it is not certain what the actual

role of physical activity has on academics. Buck, Castelli, Erwin, and Hillman (2007) concluded that physical fitness, specifically aerobic capability, positively correlated with academic achievement while BMI was inversely proportionate to academic achievement. Aerobic fitness has even been linked to a decrease in brain tissue loss during aging, as well as improving control of cognition (Gomez-Pinilla & Hillman, 2013). The recent evidence shows that exercise aids in the resistance of neurological disorders. Even with the continuous research telling the population of the extreme benefits, there is still a negative trend in the amount of neuro-atypical individuals being physically active.

Lower Participation in Persons with Special Needs

Children with developmental disorders are shown to have lower participation in physical activity than that of their typically developing peers (Kim, Mutyala, Agiovlasitis, & Fernhall, 2011; Pan & Frey, 2006). Due to the additional educational instruction needed for children with developmental disorders, physical activity is reduced or completely disregarded (Pan, 2008). Because this is the time for peers to socialize and develop interests other than school, children with developmental disorders find themselves at a disadvantage. Not only are children with special needs given less time to participate in physical activity, such as recess and physical education classes, they also show a trend in engaging less than their typically developing peers in inclusive activities, such as recess, when they are given the opportunity (Pan, 2008). Because therapy is scheduled during a time when children have the chance to socialize, they are missing out on crucial time to develop pragmatic skills. These times should be utilized as a chance for therapy outside of

the classroom rather than a time to punish a child with special needs by keeping them inside.

Physical Activity as Therapy

Physical activity is shown to be a positive form of therapy for cognitive disorders. According to Gomez-Pinilla and Hillman (2013), exercise alongside dietary management can be a successful way to moderate the impact of neurological and cognitive disorders. Because many individuals with disorders such as intellectual and/or developmental disorder (IDD) can also have other mental and health problems, they can be heavily medicated and polypharmacy occurs (Janikas, 2014) as one or two conditions are treated with many drugs. In addition, psychotropic drugs are associated with an abundance of other health risks, such as metabolic syndrome, heart disease, and diabetes. Berchtold and Cotman's study in 2002 (as cited in Janikas, 2014) suggests that exercise can facilitate learning and improve mental performance. The list of benefits from exercise are endless and by including exercise in therapy programs with individuals with disabilities, polypharmacy can be avoided and the use of psychotropic drugs, which lead to medical issues, can be limited (Janikas, 2014). Programs have been designed to help provide opportunities for individuals with special needs to have their own environment to be involved in athletics and succeed.

While continued investigation is needed, there is research on individuals with special needs that shows physical activity leads to positive and consistent results (Stanish & Frey, 2008). This research targets individuals with special needs because of the increased risk of sedentary lifestyles associated with the disability as

well as the health concerns as a result of this lifestyle. There are certain barriers that must be overcome in order to benefit from physical fitness. Obstacles range from sensory issues to social anxiety and even physical difficulties such as balance and motor skills (Menear & Neumeier, 2015). Situations with a low level of structure and requiring higher level of skill, such as organized sports in school, are challenging for children with special needs, especially those with ASD. In order to over come some of these problems, the Special Olympics was formed.

Special Olympics

The Special Olympics is one organization known around the world for structuring and supporting physical activities for persons with special needs. A fundamental idea that guides the organization is that "everyone has the capacity to be an Olympian, and that human greatness is defined more by the spirit than the body" (Special Olympics Research Overview). Eighty percent of the families involved in Special Olympics see their child's self-esteem, social skills, and self-confidence improve, as well as their skill of developing friendships and their health improving. A troubling fact is that fewer families take advantage of Special Olympics than one may think. Out of the 381,071 individuals with intellectual disabilities living in Pennsylvania, only 5.2% of them are involved in the Special Olympics (World Health Organization). With more individuals involved, there would be more opportunity to be treated as equals in the community. As stated above, individuals with special needs spend far less time than their typically developing peers participating in inclusive activities with fellow students. In order to bridge this gap and implement social involvement with peers, Unified Sports was created.

Unified Sports is a program within the Special Olympics that pairs Special Olympic athletes with typically developing partners for training and competition. While having fun is one of the most important reasons individuals choose to be a part of the Unified Sports, there are far greater benefits. This is a way to challenge those with special needs in a positive way, and build sports skills that otherwise would not be developed. Ninety one percent of those involved in Special Olympics felt that their sports skills improved, and 95% felt they were challenged at some level during their training (Nanavati & Haas, 2015). While the benefits of physical activity seem to be endless, the aspects of specific interest to this project are the ways that organized team physical activity may relate to social cognition, e.g., awareness, responsiveness, and action, of neuro-atypical individuals.

Cognition

Cognition is the act of perception, attention, action planning, and memory (Fitch, 2008). The perception-action-cognition-environment (PACE) paradigm focuses on the "neurodevelopmental processes that underlie learning and adaption to the environment through perception, action, and cognitive processing" (Dan, Pelc, Meirleir, & Cheron, 2015. p. 52). This perspective on cognition lends support to the notion that physical activity can support cognitive functioning. From previously discussed research with neuro-atypical populations, PACE provides support for specifically considering Special Olympics as a venue that can enhance quality of life for those who participate.

The contribution of non-cognitive skills to success whether in life, work, or school has emerged in the literature over the last decade (Duckworth, Peterson,

Matthews, & Kelly, 2007). These non-cognitive functions include things such as persistence, resiliency, and flexibility. Flexibility is especially important for this study because of the increased problems individuals with some cognitive differences, such as autism, have with rigidity. Trying new things, seeing someone else's perspective, and change in general are all aspects of flexibility that are difficult for these individuals. Cognitive flexibility is the ability to change your response to a specific stimulus or making a new rule for a previous stimulus (McDonald, 2014).

Social Cognition

While cognition is how we make sense of the world and non-cognitive skills keep us going, social cognition is not just about the individual. It is the concept that individuals learn about the world from social situations (Frith, 2008). Perception, attention, action planning, and memory that were discussed earlier are important in the social interactions, but it is the study of these in a social setting that is termed social cognition. Social signals including actions such as facial expression, eye gaze, and body language each teach us something different about the world around us. As an example, the facial expression anger or disgust is a warning sign of danger and eye gaze indicates an object of interest. Social cognition is required to explain these complex events. These attributes of social cognition are learned as an infant and develop throughout the years. Another important social concept is speaking turns. There are various models, which explain speaking turns. Stasser and Taylor (1991) discuss the SPEAK model, which uses three factors to determine whether or not someone will speak. These factors include the individual's disposition to speak, how much time has expired since they previously spoke, and how much competition

there is to speak. Thus, a speaking turn is any utterance that conveys meaning in the conversation.

Although social cognition is a feature in everyone's life, functions associated with this, such as recognition and modulation of emotions, perceiving social intentions to display emotions, and the knowledge and application of social rules, are more difficult for neuro-atypical individuals to learn. The special needs population encounter obstacles such as talking with a roommate, e.g., emotion recognition, job interviews, e.g., responding to others, and confrontation at work, e.g., self-assertion (Allen, Didehbani, & Chapman, 2013). In a study performed by Muller, Schuler, and Yates (2008) it was found that individuals on the Autism spectrum experienced high levels of isolation, difficulty initiating conversation, a desire for intimacy, and effort to develop better social awareness. This tells us that individuals with disabilities don't just have lower social cognition, but understand that they struggle in this area.

Summary and Questions of the Study

The research is consistent with the idea that physical activity is linked to many benefits for both neuro-typical and neuro-atypical individuals. Benefits in self-esteem, self-confidence, brain structure, social skills and academics are all topics of recent investigations. The reason academics are improved from physical activity is not fully known yet and requires further research. Also, there is a significant amount of research, especially on the website for the Special Olympics, dedicated to how the parents of children with disabilities feel about physical and organized team activity, and how they believe it effects their child. Additionally, research that focuses

directly on how neuro-atypical individuals see and conduct themselves in research is still emerging. This need is the foundation for the current study, which seeks to investigate the ownership of physical activity by persons who are neuro-atypical and examine how such ownership may transfer to non-sports activities requiring non-cognitive skills and social cognition.

Including persons with intellectual disabilities is an organizing principle for this research project. By incorporating neuro-atypical persons, "they are transformed from being the subject of study to being active and involved partners in the process" (Special Olympics Research Overview p. 51). The goal of this research is to investigate the connection between physical activity and social cognitive processes. More specifically if being involved in Special Olympics has created more awareness of social processes and if those are better developed because of it.

Questions of the Study

1. Will special needs population be able to take on tasks and be self directed in order to facilitate their own focus group?
2. In what ways do they maintain or trade roles in social groups?
3. How do the activities they are involved in shape social cognition?

Methodology

Participants

Two three-person groups of neuro-atypical individuals were formed through nomination. Each group was selected based on their current participation in the Special Olympics. The group comprised of only those who participate in the Special Olympics will be referred to as the S.O group and the group made of individuals who

are not involved in Special Olympics will be referred to as the N.S.O group. All individuals were participants of a local independent living organization for adults with special needs, Lifestyles, which is located in Northwest Arkansas.

Materials

A number of materials were used for the data collection of the two focus groups. These included color coded notecards that would pace the questions to be answered by the group due to level of importance; lined and unlined paper the assigned scribe could use to record the answers to the questions; a timer so the timekeeper could make sure all questions were answered; and a bell that could be used by any member to call the researcher into the room if assistance was needed. Two pieces of equipment were used to capture the data. These consisted of a video camera and an audio recorder. The video recorder was used during the initial data collection, while the audio recorder was used during the member checking portion of the study.

Procedures

Data was collected in a Lifestyles facility in order to ensure the participants were in a familiar environment. Before the focus groups arrived, the tables and chairs were set up along with the camera. Once seated, consent forms were explained to the participants and signed. Instructions were provided on how to conduct the focus groups. These guidelines were for the three participants to assign roles to each person. One person was to be the timekeeper, one person the scribe, and one the facilitator. The timekeeper's jobs were to start the clock, alert the group when half of the time was up (15 minutes) and notify the group when the full time

to discuss came to an end (30 minutes). The scribe's job was to take notes on what the group discussed by the use of words or pictures. The facilitator's jobs were to read the questions to the group, ensure the discussion stays on track, and guarantee everyone's opinion is heard. The use of the camera for recording purposes was explained and then recording started. The color-coded questions were provided to the groups (see Appendix A). A set of red cards asked about knowledge of being healthy, yellow cards focused on non-cognitive aspects, and the green cards were social cognitive points. Both groups were instructed to ring a bell if assistance or clarification was needed during the discussion as well as when they had completed discussing the questions completely. The recording ended as soon as the time expired regardless of if the questions were fully answered.

A second procedure was used for the member-checking portion of the study. Because each of the individuals involved in the focus group are a part of the research and not just the item of research, member checking was conducted three weeks after initial focus groups sessions. Each of the two groups met individually with the researcher to view and discuss results. Before the groups entered the room the tables and chairs were set up in a circle around a table and the video of their focus group was ready to be shown. The agenda was explained to the group, which included a viewing of the recording, a discussion of what was found, and questions from the participants for the researcher. In addition, the researcher described the use of an audio recording to be used after viewing the video. After the groups watched their video, audio recording began to capture any questions that the participants ask. The participants were able to make remarks regarding their initial

statements and make additional points about how they think being involved in the Special Olympics has helped them develop. Once the discussion was complete the audio recording ended and the focus groups left the room.

Analysis

The analyses for this study are qualitative and descriptive in nature. Video analysis of each group focused on the delegation of roles, the discussion of key questions, and the reporting of findings and rap-up. The analysis included identification of themes, challenges and repairs between speakers over the course of the video task, patterns of asking and answering questions, and writing samples from the each group's recorder. Themes identified included methods of facilitation, role selection, and types of questions discussed in member checking. Challenges during the focus groups were then identified and the methods of repairing the issue were determined for each group. The number of speaking turns was calculated by adding up the number of times each member of the group directed a meaningful question or remark to another member. In addition to speaking turns, speaking interactions per partner was analyzed. Speaking interactions were determined by coding each speaking partner based on their role and adding up the number of times they interacted verbally. This portrayed a representation of how much of the conversation was being occupied by each member. Finally, the writing samples for each group were analyzed based the organization of the scribes' notes. Initial analysis began after collection of the video recording of the focus groups. Additional analysis was performed after member checking was conducted in order to account for further information provided by the participants.

Results

Demographics

The demographic makeup was young adults with various cognitive levels. There was no control for age or gender, but all participants were clients at a local independent living organization for adults with special needs in Northwest Arkansas. The Special Olympics focus group, which consisted of one female and two males, will be referred to as the S.O group. The Non-Special Olympics group, which consisted of three females, will be referred to as the N.S.O group. For the purposes of this study the S.O group was made up of individuals who have been involved in the Special Olympics within the last year. They were also currently enrolled in the Special Olympics for the upcoming year. The N.S.O group was made up of individuals who have never been a part of the Special Olympics and are not signed up for the competition for the following year.

Description of Coding Procedures

For the purposes of facilitating analysis, coding was performed to categorize the data. The categories that are being analyzed are organization of the focus groups, speaking turns, and member checking discussion. In order to keep the participants anonymous the following codes have been applied to each member. For the S.O group, the facilitator, scribe, and timekeeper will be referred to as S_f, S_s, and S_t respectively. The facilitator, scribe, and timekeeper in the N.S.O group will be referred to as N_f, N_s, and N_t.

Question One

The first question of the study asks if individuals with special needs would be able to take on tasks and be self directed in order to facilitate their own focus group. In order to answer this question, the two focus groups were given three tasks to carry out. Three roles consisting of a facilitator, a scribe, and a timekeeper were introduced and explained to the group, but the researcher was not in the room with the participants while they were conducting their discussions. The video was analyzed for the number of questions answered by each group and the number of clarifications needed during the discussion.

Questions attempted. The first analysis of this question looked at the number of questions answered by the group. In addition to whether or not the questions were answered, the way in which the facilitator asked the questions to the group was also considered for the successfulness of the focus group. The semi-structured questions from Appendix A were presented to the groups. The list included knowledge (cognitive) aspects of fitness and health, non-cognitive based points such as work ethic and ability to persevere, and social cognitive points including self-assertion and emotion recognition.

The S.O (Special Olympics) group asked and answered ten out of ten questions. The group was allowed 30 minutes to conduct the focus group. They spent seven minutes and 45 seconds discussing the answers after the researcher left the room. To focus on the facilitator successfulness, the ways in which the facilitator conducted the group were examined. When asking the questions to the group the facilitator of the S.O group would address each person individually. For example:

S_f: "Do you think it is important to be around others, (S_t)?"

S_t: "Yes ma'am, I think it is."

S_f: "Okay, (S_s), do you think it is important to be around others?

S_s: "Yes, and if you wonder why I can tell you that too."

S_f: "No I don't need to know. But, yes I also think it is important to be around others too."

S_f: "Okay now next question, how important is it to be alone sometimes, (S_t)?

S_t: "Well I say yes."

S_f: "Okay (S_s), how important is it to be alone sometimes?"

S_s: "Sometimes I need it so…"

S_f: "Sometimes I need it too."

As you can see from the above example, the facilitator would ask the question to each participant individually and then answer the question his/her self. Each question was answered even if the topic wasn't in line with the desired outcome.

The N.S.O (Non-Special Olympics) group also asked and answered ten out of ten questions. Of the allotted 30 minutes for discussion, the N.S.O group used five minutes and five seconds. The way in which the facilitator ran the session differed in this group. Rather than ask each participant individually, the facilitator would read the question aloud and wait for someone to answer the question. For example:

N_f: "How important is it to never give up?"

N_s: "It's important."

N_t: "Not important."

N_f: "Is it hard or easy to stand up for yourself."

N_t: "Easy"

N_s: "Easy"

As demonstrated in the example, the N.S.O group's facilitator didn't direct the questions to anyone. In addition, the facilitator didn't answer the questions herself during the focus group. Even though directions were given to make sure each person answers the focus group questions, he/she chose to only read the question and wait for responses. As seen in the example the answers were much shorter and the amount of time discussing was limited to.

Clarifications needed. The next aspect of analysis pertained to the level of clarification required for the focus groups to successfully accomplish the task. Each group required help in completing some questions, but whether or not solutions were solved within the unit did differ.

The S.O facilitator needed two clarifications. This group's clarifications were solved completely intrinsically. This ability to solve problems within the group can be attributed to the teamwork ability learned through involvement in the Special Olympics.

S_f: "Is it hard or easy to set c,c…" (reaches for bell to call in the researcher)

S_s: "Want me to read it? Is it hard or easy to start a conversation with someone?"

S_f: "Thanks, is it hard or easy to start a conversation for you, (S_t)?"

This example shows how the group worked together rather than calling upon outside resources. The facilitator recognized that help was needed, and the scribe took notice of this by offering his/her help. Once the facilitator realized that the

other members could help, he/she would ask for assistance from within the group rather than from the researcher. This can be seen in the following example:

S_f: "Do you feel intelligent… Uh what is that?"

S_s: "Do you feel included with others? That's not how you spell intelligent."

S_f: "Oh sorry, do you feel included with others, (S_t)?

The N.S.O group differed in the way that they solved problems. The facilitator needed clarification once during the discussion and researcher's assistance with reading. Recognition that help was needed was still present, but in order to receive help they called upon outside resources. The following example demonstrates the way in which the N.S.O group handled problems during the discussion:

N_f: "Do you have a room-ahh- I need help sorry." (rings bell to call researcher in"

Researcher: "Do you need some help?"

N_f: "I'm having trouble spelling these words. It's hard to say."

Researcher: "If you have a roommate is it hard or easy to talk to them?"

N_f: "Oh okay. If you have a room is it…What's the answer?"

In the above example we see the facilitator call the researcher into the room to ask for assistance, but even after clarification was given he/she simply asks for the other members to answer instead of figuring out how to read the card with the question on it.

Question Two

The second question of the study asked about the ways that the individuals with special needs would maintain or trade roles in a social group. The first part of

the question addressing how the group maintained roles was answered by analyzing the ways in which the groups selected their specific role during the focus group. In addition, how successful each participant was at carrying out his or her assigned position in the group was determined. The second part of the question focused on the interchange of roles during the focus group. This was answered by looking at the number of speaking turns per group and per person. For the purposes of this research speaking turn is defined as any utterance that is intelligible and conveys meaning.

Role selection and completion. A combination of volunteering and role assigning was completed in order to determine tasks for each participant in the focus group. Each group will be discussed separately and the success of each participant will be determined.

The S.O focus group organized themselves and accomplished role selection by two volunteers and one role assigning. The facilitator was the first participant to volunteer for a role and set the tone. Once the researcher mentioned the job of reading a list of questions to the group as a task the facilitator responded with, "I am good about reading questions." This selection of roles occurred before the researcher asked for volunteers. The scribe quickly followed by saying, "I'll write the notes." As discussed previously, the facilitator successfully asked and answered all of the questions provided for the focus group. He/she ensured each person's opinion was heard. The scribe successfully took notes on each answer provided by the participants. The notes were organized by participant and listed beside the member's name was his or her answer to each question. The names are removed as

to ensure the participants remain anonymous, but each member's name was written followed by their answer to the questions in order of presentation. Instructions on how to organize the notes were not given to the group. The researcher only instructed the group that either words or pictures could be used in order to make note of the information discussed. The following image contains the notes taken by the scribe in the S.O group:

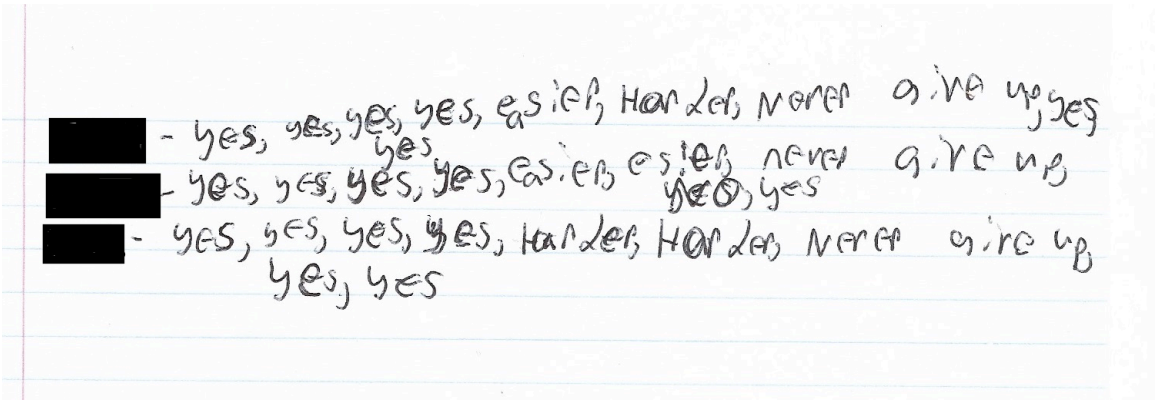

Figure 1. Notes taken by the scribe in the S.O group.

The N.S.O group had a similar approach for role selection. There were two volunteers once again in this group, but they didn't offer until after the researcher asked for a participant to execute the task. All of the role descriptions were conveyed to the group and then the researcher asked, " Can I have someone watch the timer?" The timekeeper volunteered first, followed by the facilitator, which left the scribe to carry out the final task. As previously discussed the facilitator successfully asked all of the questions presented to the group, but did not answer all of the questions him/herself. The scribe took notes based on what he/she thought was important to the group's discussion. Both pictures and words were used to explain the answers to the questions. There was no organization to the way in which

the notes were taken. Based on the video, the placement of the words/pictures on the paper didn't correspond to a pattern. Because there was no organization to the way in which the scribe of the N.S.O group took notes, it would be impossible to relate the notes to the order of the questions answered by each member. The facilitator told the scribe what to write several times rather than allowing the scribe to complete the task on his/her own. The image below contains the notes taken by the scribe in the N.S.O group:

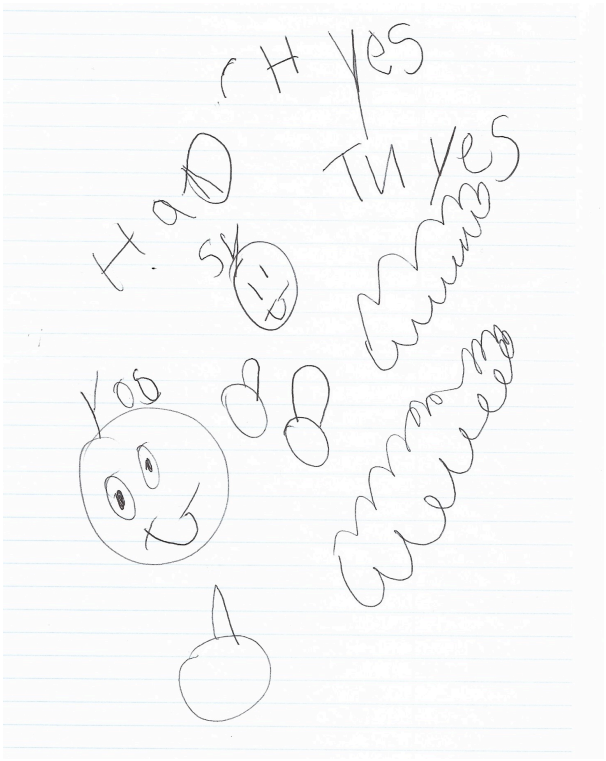

Figure 2. Notes taken by the scribe in the N.S.O group.

Speaking turns. To determine the amount of time each person spoke in comparison to the rest of the group, speaking turns were analyzed and compared. In the S.O group the facilitator had 61 speaking turns while the scribe had 40 and the timekeeper had 23. In contrast, the N.S.O group's facilitator only had 26 speaking

turns while the scribe and timekeeper both had 15. The S.O group's number of speaking turns was not only greater, but also more varied than that of the N.S.O group. Table 1 displays the amount of time speaking per member based on their calculated number of speaking turns:

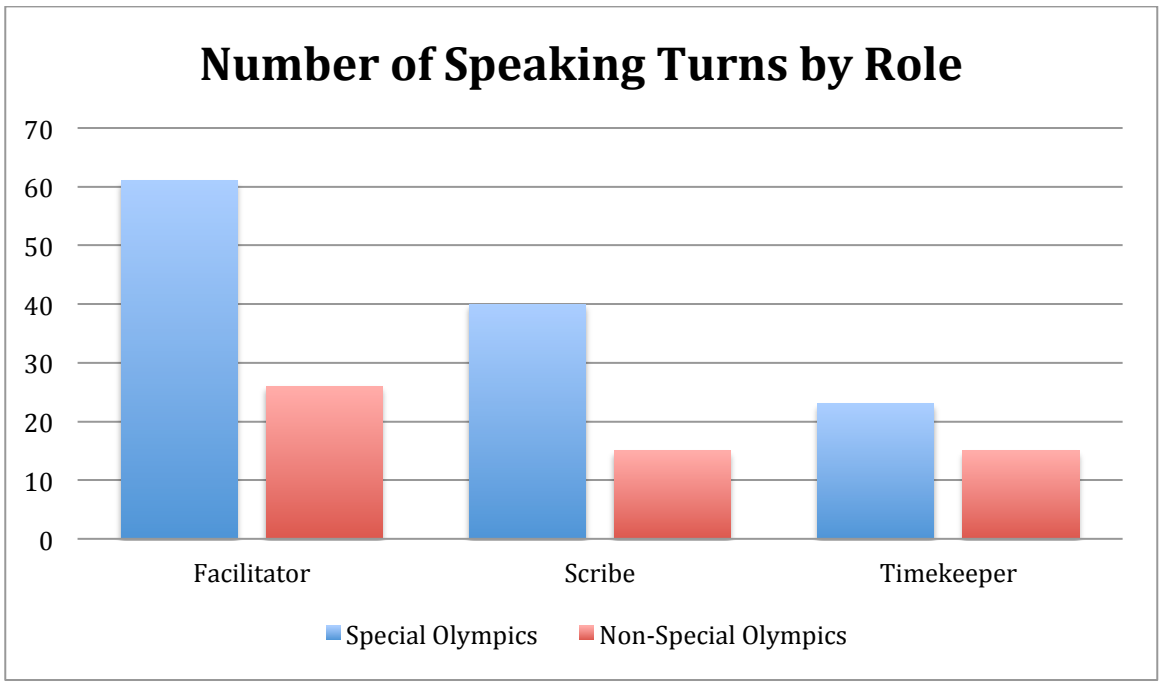

Table 1. The number of speaking by assigned role.

The number of interactions between each member of the group varied as well. The number of interactions between the facilitator and scribe in the S.O group were 56, the facilitator and timekeeper were 47, and the scribe and timekeeper were 9. In contrast, the interactions between the facilitator and scribe in the N.S.O group were 30, the facilitator and time keeper were 23, and the scribe and timekeeper were 0. Overall there were far less spoken interactions between the members of the N.S.O group, but the interactions between the scribe and the timekeeper were especially low. Analysis of the N.S.O group revealed absence of interaction between the scribe and timekeeper. They did not establish any form of

contact or coordinated effort over the course of the focus group discussion. Table 2, which follows, compares the number of back and forth interactions per group.

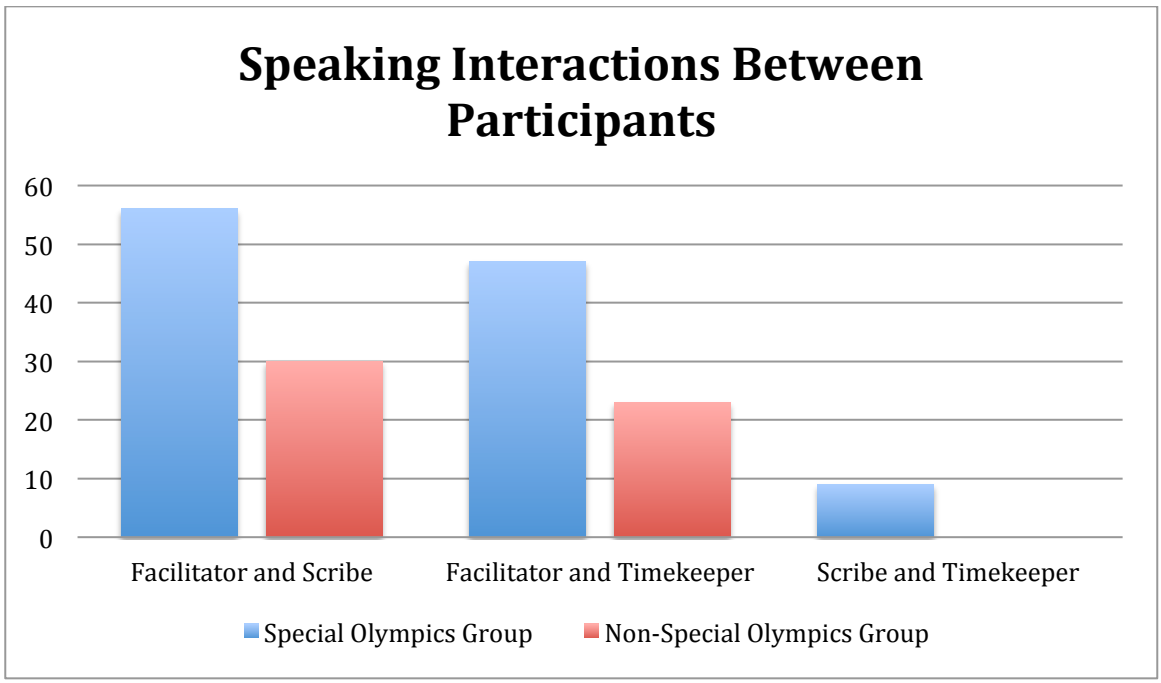

Table 2. Number of speaking interactions between participants in each group.

Question Three

The third question of the study asked how the activities in which individuals with special needs are involved shape their social cognition. The commonality between the two groups was their participation in the same independent living organization in Northwest Arkansas. One of the unique aspects about this company is the community living classes that are provide to their clients. Both the S.O group and the N.S.O group were made up of individuals who take part in these classes. They learn life skills such as cooking, relationships, and managing a house in addition to other classes that provide knowledge of music, technology, and performing arts. Because community living class is the commonality between the

two groups we can look specifically at participation in the Special Olympics to determine how it exclusively contributed to the development of social cognition.

Member checking. In order to answer this question, the member checking was completed separately by each of the two groups, and analyzed for overall experience, types of input, and questions asked. The members of each of the groups, S.O and N.S.O were excited to see the videos of their discussions. Seeing the videos did result in discussion, but much of this had little to do with what took place in the data collection or the researcher's analysis of this. Rather, the groups wanted to discuss personal questions or problems. Some of these did related to their experiences in Special Olympics or the classes they were taking and are treated here as part of the member checking experience.

The members of the S.O group discussed how the Special Olympics has helped them develop. In the following dialogue, we see that the members were aware that the Special Olympics has helped them grow and they have learned many things from being involved, topics directly related to social cognition.

Researcher: "What types of things have you learned from the Special Olympics?"

S_s: "I learned how to cope."

Researcher: "What other things have you learned from being in the Special Olympics?"

S_s: "I learned how to work as a team. And how to learn where people are coming from."

> S_f: "It is interesting that we are doing this now and watching our video and talking about it because we are actually about to compete in the Special Olympics this week. Do you know what the Special Olympics logo is? If I can not win let me be brave in the attempt. You are never a loser in the Special Olympics."

The above discussion during member checking demonstrated how socially aware the member are in the S.O group. They were able to take turns and answer the question as well as verbalize the ways in which they have grown by being a participant in the Special Olympics.

The members of the N. S.O group watched the video and did not have any questions about it or their contributions during the data collection. They talked about some of their current activities in classes, each from their own perspective without making this a joint conversation about classes and activities that they mutually share. In responses to questions from the researcher about specific aspects of the video, such as did you like the way you all worked together, they did take turns talking but did no elaboration on the answer. It is noteworthy that the focus groups, especially the N.S.O, asked questions during the member checking about how they should act in social situations, how to stand up for themselves, how to start a conversation with someone, and more. This does suggest situational social awareness that can be a base for social cognition.

Discussion

This research using a participatory action research model investigated the connection between organized team activity and awareness of social-cognitive

processes by using focus groups composed of individuals who were either involved in Special Olympics and adult enrichment classes or only in the latter. As can be seen from the results presented above, both the Special Olympics group and the Non-Special Olympics group were able to take on tasks and be self-directed in the focus groups. They volunteered to participate and were excited to see their work during the member-checking portion of the study. However, the two groups were quite different in the ways they handled the assigned group tasks. The S.O group engaged in more speaking turns, negotiated solutions to problems, and supported each other to accomplish the focus group tasks. The N.S.O group used a more teacher-directed approach where questions were asked and answered without elaboration and declared themselves finished when each item was checked off in the session. The member-checking phase of the research illustrated differences associated with social cognitive awareness. Those in the S.O group spontaneously talked about what they had learned from others by taking part in Special Olympics. The quality of their discussion differed from the N.S.O group in that parts of their conversations were negotiated among the members illustrating awareness of viewpoints and the give and take that is part of ordinary conversation. This suggests that being involved in the Special Olympics may create an awareness of social processes that contributes to their everyday interactions beyond organized team experiences.

Regardless of involvement in the Special Olympics, all these participants were able to self-direct, manage the activities of the focus group, and complete the final task. The differences between the two groups did reveal differences in social

awareness and social cognition. The group involved in Special Olympics (S.O group) demonstrated negotiation, awareness of perspectives while moving through the tasks, and exhibited social cohesiveness over the 20-minute participatory session. Because this differed in quality of interaction from the N.S.O group there is reason to think that the team based activities in organized sports may impact other aspects of daily living.

As discussed in the literature, social cognition is how we learn about the world from social situation (Frith 2008). The S.O group's discussion revealed results consistent with the fact that the ability to develop these skills is reliant upon participation in socialization. Individuals with special needs are much less involved in various areas of socialization, so being a part of the Special Olympics supplements additional socialization into their lives. More social engagement and problem solving was found when the interactions within the S.O group were compared to those of the N.S.O group. The Special Olympics focuses on teamwork, which was also part of the focus group tasks used in this study. This team aspect does suggest that beyond providing physical fitness and an appreciation for healthy living, organized team sports such as those provided by Special Olympics can translate into other socialization situation. This is an important finding as it suggests that these kinds of activities, especially for neuro-atypical individuals can contribute to a wider and more vital ways if learning to be fit.

Limitations of the Study

Several limitations impacted the results of this study. The first limitation to this study was the small number of participants and limited number of focus groups.

Only three individuals per focus group were sought so each participant would have a role in the research process. As a result, it was difficult to obtain a wide variety of answers within each group. Secondly, due to the lack of multiple groups, between-group comparisons to confirm findings were not possible. Future studies containing more participants and multiples of the same focus group would increase the reliability of these findings. Thirdly, the study didn't specify certain cognitive levels but rather included individuals with any cognitive level and diagnosis. Those who volunteered for the study were welcome to join the groups regardless of cognitive or educational status as long as they met the criteria of participating or not in Special Olympics. As a result, some participants demonstrated more skills with reading and writing than others. These various factors may, regardless of involvement in organized team sports, impact social cognition.

Future Directions

Participatory Action Research was a foundation of this study and the success of this aspect of the research opens the door for future research that would benefit the neuro-atypical population. The goal of PAR is to answer questions held by the neuro-atypical population and while conducing this project, interesting social behavioral questions were brought up by the participants. For example, The focus groups, especially the N.S.O, asked questions during the member checking about how they should act in social situations, how to stand up for themselves, how to start a conversation with someone, and more. These questions would make for an interesting study and therefore lead to true PAR research. Future research made up of more focus groups, as discussed in the limitations, would benefit from addressing

these questions held by the neuro-atypical population. In order to ensure that they are made up of individuals capable of conducting their own focus group it would be beneficial to conduct an initial focus group where the participants answer researcher established questions. Once the participants have demonstrated their ability to take on tasks and be self-directed, the peer established questions could then be introduced to the group either on the same or different day. As seen from the limitations, the number one way to improve future research is to increase the number of participants and therefore add to the number of focus groups analyzed. Not only would the future research benefit the neuro-atypically developing population, but would also continue to prove the benefits of physical activity and therefore truly understand the need for Special Olympics.

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Appendix A

Semi-Structured Interview Questions

1. How important is what we eat to our bodies?
2. How important is exercising or being active?
3. How important is it to be around others?
4. How important is it to be alone sometimes?
5. How important is it to never give up?
6. How difficult is it to talk to your roommate (if you have one)?
7. How hard/easy is it to stand up for yourself in social situations?
8. How involved do you wish to be in your community?
9. How involved/isolated do you feel?
10. How hard/easy is it to initiate conversation?

Appendix B

UNIVERSITY OF ARKANSAS

Office of Research Compliance
Institutional Review Board

January 24, 2017

MEMORANDUM

TO:	Kayla Waters Fran Hagstrom
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	16-12-365
Protocol Title:	*Learning to be Fit: Meeting the Needs of Individuals with Cognitive Differences*
Review Type:	☐ EXEMPT ☒ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 01/13/2017 Expiration Date: 01/09/2018

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (https://vpred.uark.edu/units/rscp/index.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 10 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 109 MLKG Building, 5-2208, or irb@uark.edu.

109 MLKG • 1 University of Arkansas • Fayetteville, AR 72701-1201 • (479) 575-2208 • Fax (479) 575-6527 • Email irb@uark.edu

Appendix C

Learning to be fit: Meeting the needs of individuals with cognitive differences
Consent for an Adult with Cognitive Differences to Participate in a Research Study
Principal Researcher: Kayla Waters
Faculty Advisor: Dr. Fran Hagstrom

This is a parental/legal guardian permission form for research participation. It contains important information about this study and what to expect if you permit the adult with cognitive differences under your care/guardianship to participate.

Participation is voluntary.

Please consider the information carefully. Feel free to discuss the study with your friends and family, and to ask questions before making your decision whether or not to permit the adult with cognitive differences under your care/guardianship to participate. If you permit this individual to participate, you will be asked to sign this form and will receive a copy of the form. We must also have the adult with cognitive differences under your care/guardianship assent to participate in this study.

INVITATION TO PARTICIPATE
An adult with cognitive differences under your care/guardianship is being invited to participate in a research study about the importance and impact of physical activity on the lives of individuals with cognitive differences from their perspective. S/he is being asked to participate in this study because of his/her affiliation with Lifestyles that supports opportunities to be involved in organized activity programs such as Special Olympics.

WHAT YOU SHOULD KNOW ABOUT THE RESEARCH STUDY

Who is the Principal Researcher?
Kayla Waters, Senior Honors Student, Program in Communication Disorders, University of Arkansas
ktwaters@uark.edu

Who is the Faculty Advisor?
Fran Hagstrom, Ph.D., CCC-SLP
fhagstr@uark.edu

What is the purpose of this research study?
The purpose of this project is to provide an opportunity for individuals with cognitive differences to conduct participatory research with the goal of seeing if involvement in organized sports 1) increases awareness of being and staying healthy; 2) supports work ethic and ability to persevere in non-sports aspects of life; and 3) changes social awareness and recognition of the emotions of others.

Who will participate in this study?
Ten individuals with cognitive differences are being sought through nomination as participants in this study. Five of these individuals will be selected based on their current participation in Special Olympics through Life Styles. The other five participants will be individuals who are not and have not at any past time been involved in Special Olympics.

What will the adult with cognitive differences under your care/guardianship be asked to do?
The adult with cognitive differences under your care/guardianship will be asked to meet with the researcher and to participate in focus groups with other peers to discuss various aspects of their social life. One focus group will be for individuals who have/are participating in Special Olympics, and the other will be for those who have never participated in Special Olympics. Each focus group session will last approximately 15-30 minutes. The sessions will be audio and video-recorded so the researcher can re-listen to what was said as well as see what is communicated non-verbally. After the researcher has organized the video-taped conversations into themes and identified non-verbal communication patterns, each group will be invited to meet a second time in order to watch the video, hear the conclusions found from the analysis, and clarify what was said/meant by their words and actions. This will take an additional 30-45 minutes. Participation in the study will involve a total of 1-2 hours.

IRB #16-12-365
Approved: 01/13/2017
Expires: 01/09/2018

What are the possible risks or discomforts?
There are no anticipated risks involved with this study.

What are the possible benefits to the adult with cognitive differences under your care/guardianship if he/she participates in this study?
Participating in this study may give you and/or the adult with cognitive differences personal insight about the impact of physical activity on health and social awareness. More specifically, you may gain insight about the ways that organized activities, such as involvement in Special Olympics, provide opportunities for developing awareness of social processes and group interaction.

How long will the study last?
Participation by the adult with cognitive differences under your care/guardianship will be completed within a one-month time period. The total time involvement, including the focus group and follow-up meeting, will take approximately1-2 hours.

Will the adult with cognitive differences receive compensation for time and inconvenience if you choose to allow him/her to participate in this study?
There will be no compensation for participation.

Will you or the adult with cognitive differences have to pay for anything?
No, there will be no cost in association with participation in this study.

What are the options if I do not want the adult with cognitive differences under my care/guardianship to be in the study?
If you do not want the adult with cognitive differences under your care/guardianship to be in this study, you may refuse to allow him/her to participate. S/he may refuse to participate even if you give permission. If s/he decides to participate and then changes his/her mind, the adult with cognitive differences may stop participating at any time. The adult with cognitive differences will not be punished or discriminated against in any way if you refuse to allow participation or if s/he chooses not to participate.

Voluntary Participation
You can decide any time that you and the adult with cognitive differences under your care/guardianship would like to withdraw from the study. All information pertaining to your adult child will be destroyed, and his/her image will be blocked from video recording and deleted from audio recordings.

How will the confidentiality of adult with cognitive differences under my care/guardianship be protected?
All information will be kept confidential to the extent allowed by applicable State and Federal law and University policy. All data will be kept in a secure location in the faculty member's research laboratory. When the results of study are shared through presentations and publications, this will be in an anonymous matter. No names or personally identifying information will be used.

Will the adult with cognitive differences under my care/guardianship and/or I know the results of the study?
At the conclusion of the study you will have the right to request feedback about the results. You may contact the faculty advisor, Fran Hagstrom fhagstr@uark.edu or Principal Researcher, Kayla Waters ktwaters@uark.edu.You will receive a copy of this form for your files.

What do I do if I have questions about the research study?
You have the right to contact the Principal Researcher or Faculty Advisor as listed below for any concerns that you may have.

Kayla Waters ktwaters@uark.edu

Dr. Fran Hagstrom fhagstr@uark.edu

You may also contact the University of Arkansas Research Compliance office listed below if you have questions about your rights as a participant, or to discuss any concerns about, or problems with the research.

IRB #16-12-365
Approved: 01/13/2017
Expires: 01/09/2018

Ro Windwalker, CIP
Institutional Review Board Coordinator
Research Compliance
University of Arkansas
109 MLKG Building
Fayetteville, AR 72701-1201
479-575-2208
irb@uark.edu

Informed Consent: (please print)

I, _____, have read the description, including the purpose of the study, the procedures to be used, the potential risks and side effects, the confidentiality, as well as the option to withdraw from the study at any time. Each of these items has been explained to me by the investigator. The investigator has answered all of my questions regarding this study, and I believe I understand what is involved. My signature below indicates that I freely agree to have the adult with cognitive differences under my care/guardianship participate in this study, and that I have received a copy of this agreement from the investigator.

I agree to allow the adult with cognitive differences under my care/guardianship to participate in this study.
[ ] Yes [ ] No

_____

Parent/Guardian Signature Date

IRB #16-12-365
Approved: 01/13/2017
Expires: 01/09/2018

Appendix D

Learning to be fit: Meeting the needs of individuals with cognitive differences

Principle Researcher: Kayla Waters
Faculty Advisor: Dr. Fran Hagstrom

INVITATION TO PARTICIPATE

You are invited to be part of a student research project. We want to know if you like to play sports, if you think eating healthy food is important and if so why, and if you think working/playing with other people is important. This will helps us understand how physical activity may change the ways you do other things, such as jobs or working in groups.

WHAT YOU SHOULD KNOW ABOUT THE RESEARCH STUDY

Who is the Principle Researcher?

Kayla Waters, Senior Honors Student, Program in Communication Disorders, University of Arkansas
ktwaters@uark.edu

Who is the Faculty Advisor?

Fran Hagstrom, Ph.D., CCC-SLP
fhagstr@uark.edu

What is the purpose of this research study?

We want to understand the ways that physical activity, like playing sports, changes other things such as doing jobs you may not care to do or getting to know other people.

Who will participate in this study?

Ten adults with cognitive differences will be part of this study. Five will have participated in Special Olympics and five will never have participated Special Olympics.

What am I being asked to do?

Something that is really important about this research is that we want you to be part of our research team by talking with others in a small group about your everyday life. You may be the person who makes sure everyone has a chance to talk, or the person who keeps track of time, or the one who makes notes that you can share at the end of the meeting. The group meeting will be recorded with a camera and audio so I can look, listen, and write down what is said and done. About a week later we will meet again so I can show you the video and ask if I understood what you were trying to say to each other. These meetings will take about 15-30 minutes but may be longer. They will not be longer than an hour each time.

What are the possible risks or discomforts?

We do not think this study is dangerous for you or other people.

What are the possible benefits of this study?

You may enjoy saying what you think about exercise, being healthy, and being social with other people. You may find it interesting to see how your ideas are the same or different than others in your group.

How long will the study last?

Each group meeting will probably last 30 minutes to one hour. It may last longer depending on how long people talk, but the total time added together for both meetings will not be more than 2 hours.

Will I receive compensation for my time and inconvenience if I choose to participate in this study?

You will not be given money or objects for your participation.

Will I have to pay for anything?

No, you do not have to pay for anything.

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What are the options if I do not want to be in the study?
If you do not want to be in this study, it is okay to say no. Also if you begin but then want to stop that is also okay. Your relationship with Life Styles, the university, and the researcher will not be affected in any way if you say no or stop once you have begun.

How will my confidentiality be protected?
All information will be kept confidential to the extent allowed by applicable State and Federal law and University policy. When the results of study are shared in talks or in writing, we will not use your name or any personally identifying information.

Will I know the results of the study?
At the end of the study you will have the right to ask for the results. You may contact the faculty advisor, Fran Hagstrom fhagstr@uark.edu or Principal Researcher, Kayla Waters ktwaters@uark.edu. You will receive a copy of this form for your files.

What do I do if I have questions about the research study?
If you have questions or concerns about this study, you may contact Kayla Waters the principal researcher, by e-mail at ktwaters@uark.edu or Fran Hagstrom, the faculty advisor, at 479-575-4910 or by email at fhagstr@uark.edu. For questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University's IRB Coordinator, at (479) 575-2208 or by e-mail at irb@uark.edu.

Participant Consent

The above information has been explained to me and I have been able to ask questions and state concerns. These have been answered. I understand the purpose of the study, and possible benefits and risks. I understand I do not have to do this and can stop any time I want. I understand that if important new things are found in this study, the researcher will share them with me. I understand that I still have rights even though I sign the consent form. I have been given a copy of the consent form.

Name Date

IRB #16-12-365
Approved: 01/13/2017
Expires: 01/09/2018

Appendix E

Title: Learning to be fit: Meeting the needs of individuals with cognitive differences

Email/telephone conversation seeking nominations for the study

My name is Kayla Waters and I am a senior honors student completing a degree in communication disorders at the University of Arkansas in Fayetteville. I am completing my honors requirements by conducting research that is investigating the importance and impact of physical activity on the lives of individuals with special needs (cognitive differences).

I am seeking adults to participate in this study through a nomination process. The participants will be asked to be part of one of two focus groups that will discuss various aspects of their social life. Those who have or are presently participating in Special Olympics will be in one group and those who have never participated in Special Olympics in the other. The group discussions will take about 15-30 minutes and be audio and video recorded. After I've analyzed the recordings I will be meeting again with each group for about 30-45 minutes to make sure I've correctly understood what they wanted to say. They would be involved for a total of 1-2 hours. The entire study will take place over a single month.

If you know an individual with cognitive differences in Lifestyles who has been involved in the Special Olympics in the past year, I would appreciate your sharing my contact information with him/her. I am also looking for an age matched group of individuals who have never involved in the Special Olympics.

I want you to know that this study has been approved by the University of Arkansas Institutional Review Board. There are no known risks to participants in this study. Participating in this study may give personal insight about the impact of physical activity on health and social awareness.

Their participation in this study is completely voluntary and they are free not to participate in the project. Should they become uncomfortable at any time, their part of the data collection will stop. In addition, they can decide at any time to withdraw from the study and all information they've provided will be removed.

Code names will be used for all data collection and reported in an anonymous matter in any presentations or publications. All information will be kept confidential and secure to the extent allowed by applicable State and Federal law and University policy.

If you have any questions about the study or this nomination process, please contact me (Kayla Waters kjwaters@uark.edu) or my faculty mentor, Fran Hagstrom at 479-575-4910 or by email at fhagstr@uark.edu.

IRB #16-12-365
Approved: 01/13/2017
Expires: 01/09/2018

Appendix F

LIFE STYLES
Providing Quality Services for Individuals with Disabilities since 1976.
P.O. Box 1114 • Fayetteville, AR 72702 • 479-521-3581 • www. lifestylesinc.org

December 9, 2016

To Whom It May Concern,

I, John Newman, give Kayla Waters permission to conduct research with the clients at Life Styles, Inc. I also approve of the use of our facilities, for Ms. Waters, to conduct her focus groups. If you have any questions, I can be reached at 479-521-3581 ext. 150.

Sincerely,

John Newman
Executive Director
Life Styles, Inc.

"Life Styles is in compliance with Titles VI and VII of the Civil Rights Act and is operated, managed and delivers services without regard to age, religion, disability, sex, race, color or national origin."

United Way