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Benefits of Adapted Physical Activities for Students with Disabilities

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Abstract

This senior capstone research project examines the benefits of adapted physical education for students with disabilities. Through the use of literature reviews, field observations, and interviews with three elementary school teachers, the findings revealed that adaptive physical activities , such as a program called Sami's circuit has greatly benefited students with disabilities. This kind of adapted physical activities involve the participation of many classes with a large group of students through a virtual trainer, in which teachers can easily adapt to be implemented into their individual classroom setting, and to outdoor activities as well.

Introduction and Background

My capstone project is researching the benefits of adapted physical activities for students with disabilities. This topic is very important to the health of children and motor skills development. Effective physical education is key to help students increase their self esteem and encourage an active lifestyle. Self esteem can help a student feel positive about themselves and therefore be more confident academically. Students with disabilities can particularly be impacted with low self esteem and therefore it is essential to implement adapted physical education to build their motor skill up. In synthesis of peer reviewed articles, studies provide data on the effects of aerobic exercise and executive function. A particular study and trial conducted a study with a control group of children and children with learning disabilities. "The findings suggest that the acute aerobic exercise influenced the sustained attention and the discriminatory function in children with LD by enhancing regulation of mental states and allocation of attentional resources"(Huang,2020,p 404).

There were 51 children with learning disabilities and 49 children who had typical development. The students with learning disabilities and normal learning development were randomly assigned as a control group or exercise group. "The participants in the exercise groups performed a 30-min session of moderate-intensity aerobic exercise, whereas the control groups watched a running/exercise-related video. Neuropsychological tasks, the Daueraufmerksamkeit sustained attention test, and the determination tests were assessed before and after each treatment. Exercise significantly benefited performance in sustained attention and discriminatory ability, particularly in higher accuracy rate and shorter reaction time"(Huang,2020,p 404).

My primary research question is, How do adapted physical activities benefit students with disabilities? This question is about the effectiveness and rewards that come along with physical fitness. This question is to research and answer how it can help students learn better and become more productive. My secondary research questions are What are adapted physical activities? And to what extent, when and how have they been applied to students with disabilities? What does research say about the benefits of adapted physical activities for students with disabilities? Are there advantages and disadvantages for them? How do teachers implement adapted physical activities for students with disabilities in the classroom to benefit and maximize

their learning? What are the ways of incorporating them for students to create an inclusive environment for students according to teachers? Are there resources available for teachers to implement successful adapted physical activities for students with disabilities in the classroom? If there are, what are they?

This topic is an interesting point because I believe physical activity is key for all people and especially children. I think teachers and principals across the nation should have an interest in this and also pose my research questions. My broader goal is to provide awareness of the benefits of adaptive education for students with disabilities. It is also important to provide awareness for my secondary research questions, where teachers and principals can analyze their physical education curriculum. The goal is to have well established physical education programmes in American schools that improve students well being and academic success.

1. What are adapted physical activities? And to what extent, when and how have they been applied to students with disabilities?
2. What does research say about the benefits of adapted physical activities for students with disabilities? Are there advantages and disadvantages for them?
3. How do teachers implement adapted physical activities for students with disabilities in the classroom to benefit and maximize their learning?
4. What are the ways of incorporating them for students to create an inclusive environment for students according to teachers?
5. Are there resources available for teachers to implement successful adapted physical activities for students with disabilities in the classroom? If there are, what are they?

My primary and secondary research questions were developed based on my personal history as a child in school. As a child, Physical education in general was not of any priority to the curriculum. I remember as an elementary student I was sick of sitting in class all day and wanted some time to run around and play. Basically 20 years ago the benefits of physical activity was not enforced, where teachers emphasized that side of education. There is an obvious relation with physical activity and overall health and it surprises me why we are just barely integrating physical activity for all students. That is interesting to me. This research topic is

valuable to all teachers and future teachers to lead physical activities, especially for elementary students. “PE has been a part of the definition of special education in the Individuals with Disabilities Education Act (IDEA) since its inception in 1975”(Block,2021,p 430).

A historical background of adaptive physical education began with Individuals with Disabilities Education Act in 1975. This was a time where awareness was increasing due to people paying attention to equal education rights for individuals. Physical education had a strong correlation to special education. Under federal legislation, the United States enacted a national certification examination system to better promote the development of physical education for children with disabilities. This resulted in the development of Adapted Physical Education National Standards (APENS) in 1995. APENS is a standardized method to certify adaptive sports professionals across the United States.

Another tool that was developed to identify children with adaptive needs specifically for physical education was an Individualized education program (IEP). Students identified as needing adaptive physical education will be given an IEP that outlines specific needs of the student. Services like this are accessible to children due to the Americans with disabilities act (1990) and individuals with disabilities act (1990).These enactments were to place emphasis on education of students that provided adaptive curriculum or physical education services. “Many “inclusionists” have specifically promoted social benefits as a rationale for including students with disabilities in GPE. Yet, there is a notable absence of papers that actually measure social inclusion and the related development of social skills when including students with disabilities in GPE”(Block,2021,p 430).

Literature Review

This literature review examines and researches the topic of benefits of adaptive physical activity for students with disabilities. In this literature review, there is a synthesis of related

articles on the subject of adaptive physical activity for children with disabilities. The articles present clinical data that correlate to physical and mental benefits of physical activity. There is also synthesis on data collection with difficulties teachers may have incorporating physical activity in the classroom setting. The articles pose barriers students have faced within special education and inclusion inside the classroom. These articles have close relation to data study and show diversity in terms of clinical proof among studies conducted in multiple countries.

According to Casebolt and Hodge (2010), "Appropriately implemented inclusive physical education using evidence-based strategies has been found to benefit students both with and without disabilities. Casebolt and Hodge (2010) examined the perspectives of physical education teachers and of students with disabilities. (Haegele & Sutherland, 2015) found that properly implemented inclusion of physical education can foster positive social interactions between students with and without disabilities"(Lieberman,2017,p.12). Data from many studies conducted on adapted physical activity in my research process has great benefits.

According to Dos Santos Duarte and his colleagues (2021), strength training benefits for children like increased muscle fitness, bone mass, body fat decrease, and increase in motor movement. However, there is no evidence that strength training can harm physical growth development. The data from this article was conducted in 2020 and updated in 2021. The methods of exercises were free weights, resistance bands, and use of their own body weight.

Not only does strength train for students benefit with their body composition, but it also has a high reward for improved mental health. Adaptive physical education implemented in school will improve mental state and cognition for academic improvement. "A systematic review [54] by Dos Santos Duarte et al (2021) suggests that there are positive associations among physical activity, muscular fitness, cognition, and academic achievement. However, the most current evidence demonstrates that acute and chronic exercises may have a positive effect on executive function for children and adolescents, especially in terms of working memory "(Duarte et al,2021,p.15). Mentally, students develop self-esteem, motivation, and self

evaluation. Strength training variations of exercises in adolescence also benefit the increased chance of continuing into adulthood.

Children with learning disabilities from a neuropsychological perspective process and acquire information different from a child within normal learning specifications. Individuals with learning disabilities may show inaccurate or slow reading, low math development, poor math reasoning, and poor writing skills that lack clarity. "Particularly, children with LD generally have frontal cortex dysfunction, which may compromise their executive functions (EFs) that determine the planning, selection, and ongoing regulation of behavior. Frequently, LDs are associated with weakness in EF domains, such as working memory, set shifting, sustained attention, discriminatory ability, interference control, and response inhibition"(Huang,2020,p. 405).

In the studies conducted by Huang, the finding of children with learning disabilities exhibit weak sustained attention and discriminatory ability, and this is positively affected by acute exercise. These various mechanisms can very well be linked with acute exercise and increased discriminatory function. "We theorized that the sustained attention and discriminatory ability of children with LD could be positively affected by acute exercise. Therefore, the purpose of this study was to further our understanding of the extent to which moderate-intensity exercise impacts the sustained attention and discriminatory ability of children with LD relative to their TD peers."(Huang, 2020,p. 406) The hypothesis is that children with learning disabilities and participate in acute exercise will exhibit greater positive changes in sustained attention and discriminatory ability.

In Chung-Ju Huang's study, they had a total of 115 participants aged between 10 and 13 years old. 66 with learning disabilities and 49 without any. The students were from 8 primary schools in Taipei,Taiwan. The measures to conduct their study was through Daueraufmerksamkeit (DAUF) sustained attention test. It is an assessment of long term selective attention and concentration. In the tests students watched rows of triangles that appeared against a black background on a computer screen. The rows were either pointed up or down and students

needed to quickly identify when there was a pattern of the consecutive rows of up or down. These rows would appear at irregular intervals.

"For the LD and TD groups, the participants who received the exercise treatment had a greater accuracy rate at the posttest than the pretest. In contrast, for both the LD group and the TD group, those who received the control treatment exhibited no difference in the accuracy rate between the pretest and the posttest"(Huang,2020,p. 413). Students with learning disabilities and students without showed improved sustained attention and discrimination ability. In comparison for children with learning disabilities and children without, performance at the determination test revealed a greater change in the accuracy rate and attention rate.

Disadvantages or cons of adaptive physical education are challenges of implementing an effective plan into classrooms. One of my secondary research questions is: How do teachers implement adapted physical activities for students with disabilities in the classroom to benefit and maximize their learning? According to the article by Mauerberg-deCastro(2013), inclusion of adaptive physical education in the classrooms was essential. Therefore, proper training of teachers was most likely a worthy investment. "Self-perceived competence is directly related to experien-ces in teaching students with disabilities and to participation in educational preparation courses in special education or adapted physical education"(Mauerberg-deCastro,2013,p. 650).

An effective tool in helping educators integrate adaptive Physical education is through ecological concepts by Gibson (1977). This approach is effective where the sources of constraints within adapted physical education classes reflect the complexity and simplicity of those dynamic behaviors. An example of this can be the complexity of a student's constraints with a disability. The constraints can be the disability itself, social expectations, or previous experiences. A simplistic view is where the student uses simple behavioral solutions like teamwork on a soccer team to score one goal. "Numerous studies have found that attitudes of teachers vary according to the quality of prior contact with students with disabilities (Bines & Lei, 2011; Michailakis & Reich, 2009). For example, physical education teachers who have not had contact with students with disabilities, nor have had teacher training that includes pedagogical practices with heterogeneous groups (e.g., adapted physical education), do not

consider themselves able to teach in inclusive environments, and tend to express unfavorable attitudes toward teaching students with disabilities"(Mauerberg-deCastro,2013,p.650).

To help teachers learn techniques of inclusion for students with disabilities were the peer tutor strategy. "Peer tutoring is an appropriate strategy for situations in which no specialized services are available, in classes with a large number of students or with a lack of equipment, and where students with disabilities need special attention"(Mauerberg-deCastro,2013,p.651). Self efficacy for a teacher is essential for integration of adaptive physical education. The issue is teachers feel they are not qualified or trained and therefore lack sufficient knowledge to teach in an inclusive setting. The study in the article showed that even with in depth training using the peer tutor model, the notion of self efficacy was resistant to change. Teachers and future educators favored inclusion for students with disabilities, but still had doubts about benefits of inclusion. The study also shows teachers with or without training for integration of adaptive physical education reinforce the notion that it does not guarantee positive attitudes for inclusion.

Physical education has holistic benefits for all students and specifically those with disabilities. Physical education supports the development of three critical learning areas, cognitive, psychomotor, and affective. P.E for students is predominately the main source for physical activity and establishes necessary development of physical skill sets in adolescence. This is where physical education classes foster the importance of an active lifestyle and advance those physical skills. "According to the National Association for Sport and Physical Education (NASPE, 2013c), an active lifestyle has numerous benefits, including (a) increasing blood to the brain, (b) increasing mental alertness, and (c) helping to maintain a positive attitude. Exercise increases the heart's ability to maintain efficiency and prevent illness, allowing students to attend school more often (NASPE, 2013c). Regular exercise also raises students' self-esteem and decreases their chance of developing depression or other mental illnesses (NASPE, 2013c)."

Physical education can help students benefit holistically and experience more success throughout their school years into adulthood. Most students spend around 6 hours or more sitting in cars to and from school and in class. This is substantial and contributes to the amount of daily inactivity for children. While in school students were always told to sit down, be quiet and listen.

This inactivity for extended periods of time can be difficult for children but specifically children with disabilities. Disabilities like limited physical mobility, intellectual or social delays, and sensory impairments can cause students to become off task. This can decrease their opportunity for success.

According to the Centers for Disease Control (CDC), “people with disabilities have an increased chance of health difficulties. Obesity rates for children with disabilities are 38% higher than for their peers without disabilities; furthermore, adults with disabilities have a 58% higher chance of being obese than adults without disabilities (CDC, 2010).” It is important that all students access physical education but specifically students with disabilities should have essential access. According to the article by Klien(2015), the majority of students receiving special education services do not receive quality physical education. “Several factors can contribute to the higher obesity rates of students with disabilities. In particular, students with disabilities may have limited access to healthy food, have difficulty chewing or swallowing food, take medications with side-effects such as weight gain or changes in appetite, possess physical limitations or experience pain with movement, or accessible environments”(Klien,2015,p. 164).

“Statistics show obesity rates for children with disabilities are 38% higher than their peers without disabilities ; furthermore, adults with disabilities have a 58% higher chance of being obese than adults without disabilities”(Klien,2015, p.164). Incorporation of physical activity can support students' college readiness by the development of fitness components, weight control,understanding the benefits of an active lifestyle, and learning time management skills. Physical activities can be challenging to some students with disabilities and for P.E teachers who are unprepared to support them. Collaboration between teachers because many times teachers can feel unable to accommodate students with disabilities. This is due to lack of communication and support within the education team.

It is essential that teachers and staff members work as a team to support each other and achieve meaningful outcomes for the students. Special education teachers and physical education teachers will enhance the quality of the students physical activity if they collaborate on a consistent basis. Physical education teachers are left out with regard to IEP’s and therefore

creates a disconnect. Physical education should be an integral component to a child's development. Special education and physical education teachers need to focus on not allowing this to happen. This lack of collaboration indirectly affects students' overall success.

"Clear and constant communication between special and physical educators is a great way to also ensure students' safety in PE classes. When physical educators are informed about medical challenges students experience, they can better prepare the PE environment and curriculum"(Klien, 2015,p.165). In many cases school districts do not have adaptive physical education teachers or qualified physical education teachers to accommodate students. This results in physical education teachers that do not have the necessary experience working with students with disabilities. This is where collaboration is key to successful integration of adaptive physical education for students to have success both in PE class and in academics.

An important factor in collaboration is safety for the students during adaptive physical activity. There should be information shared of any possible medical history or condition. Teachers can also discuss student goals for PE and train any staff members for student support of any needs. It is important for teachers to understand the value physical activity can benefit all students. It is essential that teachers collaborate with one another to integrate physical activity for students' success in all fields.

There is a clear understanding that physical activity is beneficial for all children, but particularly students with disabilities do not become physically active enough. These benefits are just as important for students with disabilities as students without any. There is more research needed to develop better understanding of best practices to create positive learning outcomes. This better understanding includes physical education experiences, physical education teachers,

and concerns students with disabilities have. “PE has been a part of the definition of special education in the Individuals with Disabilities Education Act (IDEA) since its inception in 1975. IDEA is overdue for reauthorization”(Block,2021,p 430).

Examining students' experiences is important to gauge how educators are doing to provide beneficial outcomes. This is critical to advancing adaptive physical activity for students. A positive change from the past is the segregation in adaptive P.E. to inclusivity with general physical education. This created a shift to research focus on general physical education by exploring benefits and concerns. “Traditionally, research focusing on the appropriateness of experiences in PE has tended to focus on the opinions of stakeholders, such as parents (e.g. Columna et al., 2014), peers (e.g. McKay et al., 2015) and teachers” (e.g. Hersman & Hodge, 2010).

“When the Education for All Handicapped Children Act (1975) was passed in 1975, it stipulated that students with disabilities were required to receive appropriate PE, delivered by qualified teachers, and that their PE instruction should be implemented in the least restrictive environment”(Block,2021,p 433). Currently there is no systematic approach to understanding students' learning outcome or the amount of instruction required. The issue with the law was that state departments of education, and public schools would define the parameters. There is in place the adaptive physical educator qualifications in place but overall there were and are many holes.

Methods and Procedures

The methods and procedures were conducted through peer review articles, field observations, and 3 teacher interviews. Through field observations I was able to see how teachers integrated physical education into the curriculum and the systematic approach. There were multiple ways of incorporation of the adaptive physical activities. The main resource teachers were provided was called Sami’s Circuit. Sami's Circuit is a K-6 social emotional learning program that combines the best of the CASEL 5 Framework with kinesthetic learning. “Our program features a series of engaging, weekly videos designed to be easily incorporated into

classrooms or after-school sites. This energetic, interactive program requires no staff training or prep work. It's the ideal SEL supplement for both schools and after-school programs"(Sami's Curciut.com)!

This physical education program is asynchronous virtual instruction. Teachers have access to this program through an app and can utilize this adaptive physical education program in the classroom. The app has multiple physical activity types and also educates students on the benefits of physical activity. Sami's Circuit integrates social emotional learning(SEL) through these physical activities that benefit overall health. This information was also relayed to me through the 3 interviews conducted at Live oak elementary school. Sami's Circuit has video instruction that is age or grade appropriate.

While conducting my research, the school overall would gather in the gymnasium and participate with all 4th and 5th grade students and each grade accordingly. I was able to observe each grade level participate for each session. Through interviews and field observations; Teachers would also take the methods learned from Sami's Circuit and adapt it to an outside setting. This is where the teacher will lead the instruction and transition to an organized sports game. It was interesting to see and participate in these teacher-led organized sporting events. The teachers will create posters for students playing in the game and have many grade levels observing as fans.

The theme of that week's sporting event was football. The students chose to call it a superbowl based on the recent weeks of competitive play and elimination per classroom. Each class had a team representing the particular room. Teachers would use technological resources to design signs and a certificate to the champion class. The students were very excited and motivated to be acknowledged to have a certificate of achievement hanging on their classroom wall. This was a great experience to see the detailed effort to help students engage in physical activity and become educated on the benefits of this.

The three teachers I interviewed were Coleen Elliot, Emily Poole, and Megan Jacobs. This school helped me see the dynamics of this school's adaptive physical education program

and how the teachers incorporate it. It was great learning the resources teachers have to integrate physical education into the curriculum. Coleen Elliot was the 5th grade teacher, Emily Poole the 3rd garage teacher, and Megan Jacobs was the first grade teacher that I interviewed. These three teachers were very helpful in my research data collection.

Results, Findings and discussion

In this section, The results from peer reviewed articles, field observations, and three teacher interviews will provide clarity on the benefits of adaptive physical activity for students with disabilities. My secondary research questions are What are adapted physical activities? And to what extent, when and how have they been applied to students with disabilities? What does research say about the benefits of adapted physical activities for students with disabilities? Are there advantages and disadvantages for them? How do teachers implement adapted physical activities for students with disabilities in the classroom to benefit and maximize their learning? What are the ways of incorporating them for students to create an inclusive environment for students according to teachers? Are there resources available for teachers to implement successful adapted physical activities for students with disabilities in the classroom? If there are, what are they? This section will provide detail on the research of beneficial physical activity for students with disabilities and the finding of how teachers implement physical activity into the classroom.

From peer reviewed articles, the benefits of adaptive physical activity showed positive associations with relation to exercise and cognitive stimulation. "A systematic review [54] by Dos Santos Duarte et al (2021) suggests that there are positive associations among physical activity, muscular fitness, cognition, and academic achievement. However, the most current evidence demonstrates that acute and chronic exercises may have a positive effect on executive function for children and adolescents, especially in terms of working memory "(Duarte et al,2021,p.15). This research indicated students developed better cognitive ability, increased muscle fitness, bone mass, body fat decrease, and increase in motor movement. Mentally, students develop self-esteem, motivation, and self evaluation. Strength training variations of exercises in adolescence also benefit the increased chance of continuing into adulthood.

The advantages for physical activity show great results and benefits. Students who lack a developed physical activity plan can have many consequences. According to the Centers for Disease Control (CDC), "people with disabilities have an increased chance of health difficulties.

Obesity rates for children with disabilities are 38% higher than for their peers without disabilities; furthermore, adults with disabilities have a 58% higher chance of being obese than adults without disabilities (CDC, 2010).”

“We theorized that the sustained attention and discriminatory ability of children with LD could be positively affected by acute exercise. Therefore, the purpose of this study was to further our understanding of the extent to which moderate-intensity exercise impacts the sustained attention and discriminatory ability of children with LD relative to their TD peers.”(Huang, 2020,p. 406) Through detailed research and field studies Dr. Chung-Ju Huang correlated great outcomes with physical activity and executive functions. “Particularly, children with LD generally have frontal cortex dysfunction, which may compromise their executive functions (EFs) that determine the planning, selection, and ongoing regulation of behavior. Frequently, LDs are associated with weakness in EF domains, such as working memory, set shifting, sustained attention, discriminatory ability, interference control, and response inhibition”(Huang,2020,p. 405).

The test trials of students who performed exercises compared to those who did not, showed “For the LD and TD groups, the participants who received the exercise treatment had a greater accuracy rate at the posttest than the pretest. In contrast, for both the LD group and the TD group, those who received the control treatment exhibited no difference in the accuracy rate between the pretest and the posttest”(Huang,2020,p. 413). Dr. Chung-Ju Huang found students benefitted with increased executive function and memory, including accuracy rate on memory tests.

The disadvantages of implementing physical education into the classroom historically was a challenge for teachers. The core issue in the class setting was how can teachers provide inclusive environments for students with disabilities among general education students. Teachers on many occasions could not provide individual attention to help students with disabilities, therefore students lacked quality development. Examining students' experiences is important to gauge how educators are doing to provide beneficial outcomes. This is critical to advancing

adaptive physical activity for students. A positive change from the past is the segregation in adaptive P.E. to inclusivity with general physical education.

"When the Education for All Handicapped Children Act (1975) was passed in 1975, it stipulated that students with disabilities were required to receive appropriate PE, delivered by qualified teachers, and that their PE instruction should be implemented in the least restrictive environment"(Block,2021,p 433). These laws increased chances for children with disabilities to get the needed adaptive physical education. Teachers are required to collaborate with one another and create effective developmental plans. "Clear and constant communication between special and physical educators is a great way to also ensure students' safety in PE classes. When physical educators are informed about medical challenges students experience, they can better prepare the PE environment and curriculum"(Klien, 2015,p.165).

According to the article by Mauerberg-deCastro(2013), inclusion of adaptive physical education in the classrooms was essential. Therefore, proper training of teachers was most likely a worthy investment. "Self-perceived competence is directly related to experien-ces in teaching students with disabilities and to participation in educational preparation courses in special education or adapted physical education"(Mauerberg-deCastro,2013,p. 650). Incorporating physical activity into the classroom is essential to overall success for students.

Through field observations, findings included structured physical activity for students with and without disabilities. Overall students with disabilities were provided inclusion into large group physical engagement."Peer tutoring is an appropriate strategy for situations in which no specialized services are available, in classes with a large number of students or with a lack of equipment, and where students with disabilities need special attention"(Mauerberg-deCastro,2013,p.651). Teachers were better equipped with training and resources available to provide effective physical education outcomes with all students, ranging from intellectual, physical, or emotional disabilities.

Three teachers I interviewed possessed access to an interactive physical education app called Sami's circuit. This was asynchronous virtual instruction through videos, in which the

teacher would supervise and assist students with extra support. These findings show physical activity is becoming more incorporated into academic curriculum, with the goal of benefiting students physically and academically. In observation, methods of incorporation of physical activity for students was advancing the instructional videos on Sami's circuit to an outdoor activity. The main video physical activities were conducted in the classroom. The teacher could also move the physical activity outdoors and create a new PE game or exercise. All three teachers and the entire school would participate in the gymnasium and break out to classrooms. Certain days of the week would be as a whole or individual classrooms.

The results of this research paper has shown the facts of benefits provided by adaptive physical education for disabled students and students in general. Physical activity for students with disabilities increases self esteem, increased motor function and coordination, mental health, and health overall. Legislators have revised laws over the years to better equip educators to increase physical activity in schools, as well as creating inclusive environments for all students. This has been accomplished through effective collaboration between teachers and adaptive physical education teachers. Public health officials and state governments discerned the qualities of adapted physical activity for students and incorporated it into public school curriculum accordingly.

This topic is important to me because physical activity makes quality of life better for people and is essential to kick start students' journey to an active lifestyle into adulthood. The collection of data throughout this process has allowed me to gain an understanding of the history, barriers, and adaptations of physical activity for students with disabilities. I think we as a nation have increased awareness with benefits of adaptive PE and are advancing in a positive direction to prioritizing adaptive physical activity.

Problems and limitations

A main problem and limitation in collecting data was scheduling times to conduct my teacher interviews. There was a process involved to obtain schedules of teachers to have time set

aside for questions and times or locations of physical education curriculum. There were also delays concerning response times from educators and approval from directors. When first conducting field observation and teacher interviews, the particular week was conference scheduling regarding student progress with parents. This was a major delay with teachers availability from busy scheduling conflicts.

Many of the physical activity instructions at Live Oak School were provided during morning hours that conflicted with CSUMB class times. There was also an interesting problem I personally had when researching data on peer reviewed articles. When collecting peer reviewed data, there were technological issues providing me access to the material that delayed some time. This was not a major issue but an annoying setback trying to access my data. This delay was through the CSUMB library database where this small glitch was.

Recommendation

A recommendation for the school I specifically observed was the lack of teacher support. I noticed there was a high student to teacher ratio where some students did not get the quality instruction necessary. The school overall has invested well to provide this third party resource to help students become physically competent and educated on the topic of physical activity and its importance. The school can become better by advancing the quality of instruction by acquiring or allocating funds to hire more support staff accordingly. Instruction and clarification is one of the essential components to effective adaptive physical education and therefore increasing resources to as many students only increases efficacy.

Conclusion

In conclusion, Adaptive physical activities for students with disabilities benefit considerably with increased academic success, mental wellness, and self esteem. My Primary research question was How do adapted physical activities benefit students with disabilities? Findings show children who receive physical activity increases their mental acuity and perform

better on tests.Through studies conducted, the stimulation of physical activity through aerobic exercise benefits students physical ability and mental capacity.“For the LD and TD groups, the participants who received the exercise treatment had a greater accuracy rate at the posttest than the pretest. In contrast, for both the LD group and the TD group, those who received the control treatment exhibited no difference in the accuracy rate between the pretest and the posttest”(Huang,2020,p. 413).

Research findings show Physical activity for children develops increased muscle fitness, bone mass, body fat decrease, and increase in motor movement. Overall these processes help students develop self awareness and positive relations to exercise. In relation to my secondary questions, historically there have been barriers that damage teachers ability to provide effective adapted physical activity services. As adaptive physical education is becoming more prevalent, collaboration among teachers and physical education teachers can help students succeed with inclusive instruction.

Conducting field observations and teacher interviews shows how the education system has implemented adaptive physical education into the class curriculum. Teachers have developed improved ways of inclusive environments for students with disabilities. Historically teachers have struggled with ways of incorporating physical activity for students, but with integration of IEP’s and Individuals with disabilities act, students and teachers can collaborate to create comprehensive physical education plans. Through teacher interviews, data points to established physical education classes incorporated into the school academic curriculum. The emphasis on physical activity to benefit students academic success was of high priority.Overall, adaptive physical activity has great advantages to help students better achieve their goals.

Sources Consulted to Date

Alesi, M. (2017). Investigating parental beliefs concerning facilitators and barriers to the physical activity in down syndrome and typical development. *SAGE Open*, *7*(1), 215824401668779-. https://doi.org/10.1177/2158244016687799
This article investigates the effects of facilitators and barriers in terms of physical activity for children with down syndrome. The investigation includes studies of issues that cause barriers for disabled students specifically with down syndrome.

Alesi, M., & Pepi, A. (2017). Physical activity engagement in young people with down syndrome: Investigating parental beliefs. *Journal of Applied Research in Intellectual Disabilities*, *30*(1), 71–83. Retrieved from https://doi.org/10.1111/jar.12220
This article pertains to physical activity engagement in young people with down syndrome. It goes into research on historical development for young people with down syndrome and to where they are as they mature in age. The article has research data on physical activity and benefits of adapted physical education.

Block, M. E., Haegele, J., Kelly, L., & Obrusnikova, I. (2021). Exploring future research in adapted physical education. *Research Quarterly for Exercise and Sport*, *92*(3), 429–442. https://doi.org/10.1080/02701367.2020.1741500
The article has great research and data that correlates to adapted physical education. The article investigates expanding research on ways of improving adapted physical education.

Buchanan, A. M., Miedema, B., & Frey, G. C. (2017). Parents' perspectives of physical activity in their adult children with autism spectrum disorder: A social-ecological approach. *Adapted Physical Activity Quarterly*, *34*(4), 401–420. https://doi.org/10.1123/apaq.2016-0099
Research on parents' perspective of physical activity in their adult children specifically with autism has data related to background of physical activity.

Declerck, L., Stoquart, G., Lejeune, T., Vanderthommen, M., & Kaux, J.-F. (2021). Barriers to development and expansion of adaptive physical activity and sports for individuals with a physical disability in sports clubs and centres. *Science & Sports*, *36*(3), 202–209. https://doi.org/10.1016/j.scispo.2020.12.002
This article has good research data with regards to adaptive physical education. There are barriers to development and expansion of adaptive physical activity of individuals with disabilities.

dos Santos Duarte Junior, M. A., López-Gil, J. F., Caporal, G. C., & Mello, J. B. (2022). Benefits, risks and possibilities of strength training in school physical education: A brief review. *Sport Sciences for Health*, *18*(1), 11–20. https://doi.org/10.1007/s11332-021-00847-3
Dos Santos Duarte investigates risks and possibilities of strength training in school physical education. There is a rich source of data that relates to the benefits of physical education in school settings.

Huang, C.-J., Tu, H.-Y., Hsueh, M.-C., Chiu, Y.-H., Huang, M.-Y., & Chou, C.-C. (2020). Effects of acute aerobic exercise on executive function in children with and without learning disability: A randomized controlled trial. *Adapted Physical Activity Quarterly*, *37*(4), 404–422. https://doi.org/10.1123/apaq.2019-0108
This is a very informative article about acute aerobic exercise on functions in children with and without learning disability. This article provides a comparison of benefits between students with and without disabilities.

Johnson, C. C. (2009). The benefits of physical activity for youth with developmental disabilities: A systematic review. *American Journal of Health Promotion*, *23*(3), 157–167. https://doi.org/10.4278/ajhp.070930103
The article discusses in great detail the benefits of physical activity for youth with developmental disabilities. The article has good statistical data on youth physical activity to benefit overall health.

Klein, E., & Hollingshead, A. (2015). Collaboration between special and physical education: The benefits of a healthy lifestyle for all students. *Teaching Exceptional Children*, *47*(3), 163–171. https://doi.org/10.1177/0040059914558945
This article is a good resource for my capstone research project because there is sufficient data between special education students and physical education. There is a strong correlation between special education and physical education.

Kustova, I. A., Starostina, A. V., Nikulin, A. V., & Sedunova, E. V. (2021). Adaptive work program of physical education lessons for elementary school students with disabilities. *SHS Web of Conferences*, *97*, 1029-. https://doi.org/10.1051/shsconf/20219701029
This article relates to my research paper by also researching an adaptive program to benefit elementary school students in physical education with disabilities. The article provides good standards to integrate an adaptive physical education program focused on establishing benefits for students with disabilities.

Mauerberg-deCastro, E., Paiva, A. C. de S., Figueiredo, G. A., Costa, T. D. A. da, Castro, M. R. de, & Campbell, D. F. (2013). Attitudes about inclusion by educators and physical educators: Effects of participation in an inclusive adapted physical education program. *Motriz : Revista de Educação Física. Unesp*, *19*(3), 649–661. https://doi.org/10.1590/S1980-65742013000300017
This study goes in depth on the pedagogical aspect of how teachers feel about inclusion for students with disabilities. The article provides teacher surveys and data collected on how effective inclusion of adaptive physical education is for students with disabilities.

Menear, K. S., & Neumeier, W. H. (2015). Promoting physical activity for students with autism spectrum disorder: Barriers, benefits, and strategies for success. *Journal of Physical Education, Recreation & Dance*, *86*(3), 43–48. https://doi.org/10.1080/07303084.2014.998395
The article here suggests promotion of physical activity for students with autism. The article provides data and survey information. This includes key information relating to my research topic on barriers, benefits, and strategies for successful results for students that need adaptive physical education.

Olive, C., Gaudreault, K. L., & Lucero, A. (2021). Strategies for Implementing Social-Emotional Learning in Adapted Physical Education. *Teaching Exceptional Children*, *54*(1), 63–69. https://doi.org/10.1177/00400599211046279
This topic relates to my research because I find the article informative on adaptive physical education. There are good points where social emotional learning in adaptive physical education bolstered benefits for students in many ways.

Stanish, H., Curtin, C., Must, A., Phillips, S., Maslin, M., & Bandini, L. (2015). Enjoyment, Barriers, and Beliefs About Physical Activity in Adolescents With and Without Autism Spectrum Disorder. *Adapted Physical Activity Quarterly*, *32*(4), 302–317. https://doi.org/10.1123/APAQ.2015-0038
This article covers physical activity for students with disabilities specifically with autism. The article goes in depth on the enjoyment, barriers, and beliefs of benefits of

physical activity for students with autism spectrum disorder and students without. There is good data that analyzes a control group compared to students with autism with regard to physical activity.

Sun Y, Yu S, Wang A, Chan HC, Ou AX, Zhang D, Xie Y, Fong SSM, Gao Y. Effectiveness of an adapted physical activity intervention on health-related physical fitness in adolescents with intellectual disability: a randomized controlled trial. Sci Rep. 2022 Dec 30;12(1):22583. doi: 10.1038/s41598-022-26024-1. PMID: 36585423; PMCID: PMC9803657.

Wang, L., Qi, J., & Wang, L. (2015). Beliefs of chinese physical educators on teaching students with disabilities in general physical education classes. *Adapted Physical Activity Quarterly*, *32*(2), 137–155. https://doi.org/10.1123/APAQ.2014-0140
This article provides data on inclusion for students with disabilities entering general physical education classrooms. There is data on beliefs of physical educators on how their opinion is about successful inclusion of students with disabilities into physical education classes. There is also data on challenges they face on this topic. There are issues of how educators adapt the students into the class and ways to incorporate tools or methods.

Appendix A

Interview Questions for Teachers

1) As a teacher, how do you implement adaptive physical activities for students with disabilities in the classroom to benefit and maximize their learning?
2) As an educator what are your ways of incorporating adapted physical activities for students to create an inclusive environment for students?
3) Are there resources available to you as a teacher to implement successful adapted physical activities for students with disabilities in the classroom? If there are, what are they?
4) How do teachers implement adapted physical activities for students with disabilities in the classroom to benefit and maximize their learning?
5) What are the ways of incorporating them for students to create an inclusive environment for students according to teachers?
6) Are there resources available for teachers to implement successful adapted physical activities for students with disabilities in the classroom? If there are, what are they?