The Benefits of a Proposed Exercise Program for Populations Living with Mental Retardation

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Abstract

The benefits of physical activity and exercise have been the topic of research for decades. With the variety of results supporting the importance of exercise in the general population, research needs to be conducted to discover whether exercise provides the same benefits for the mentally retarded population. A review of past research was conducted in order to develop and propose a program for understanding the benefits of various types of exercise. The benefits of conducting the proposed research is also discussed along with any limitations that apply.
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Increasing awareness for the importance of exercise and physical fitness is the focus of many health educators, researchers, and doctors. While researchers have spent much time studying the numerous benefits of exercise on the general population, little research has been done to understand how these benefits apply to the mentally retarded. Research focusing on such groups would not only benefit the mentally retarded population and those who assist them daily, but would also be especially beneficial to the institutionalized mentally retarded population. Because institutionalized mentally retarded populations reportedly exhibit only one-third the amount of energy output of non-institutionalized individuals, increasing activity and exercise in these populations is imperative to increase overall health. Since many institutionalized mentally retarded populations are aerobically inactive and portray cognitive and behavioral difficulties, the effects of an exercise program could be extremely beneficial.

The purpose of this project was to create a ten-week exercise program for a group of mentally retarded children living in a monitored home. An outcome evaluation would then be performed to discover any progress made pertaining to behavioral improvements, physical fitness, and overall mood.

Mental Retardation

The National Institute of Health (NIH, 2008) describes mental retardation as “a condition diagnosed before age 18 that includes below-average general intellectual function, and a lack of the skills necessary for daily living” (NIH, p.1). Mental retardation effects 1-3% of the population, and though there are many causes, doctors can only specify a cause in approximately 25% of cases (NIH). The level of impairment varies widely and ranges from severe to mild or borderline (NIH). Depending on the level of retardation, symptoms may vary but generally
include continued infantile behavior throughout development, decreased or lower level learning abilities, failure to meet intellectual developmental markers, inability to meet educational demands at a standard school levels, and a lack of curiosity (NIH). There are several measures for mental retardation, but the most common is scoring below 70 on the Intelligence Quotient (IQ) test (NIH).

Many diseases or disorders occur comorbidly with mental retardation. Some of these include Down’s syndrome, fetal alcohol syndrome, mood disorders, depressive disorders, bipolar disorder, attention deficit hyperactivity disorder, and many other learning disabilities (NIH, 2008).

Numerous treatments and adapted programs for mentally retarded individuals are available. The goal of treatment is to develop the person’s potential for “normal” living to the fullest (NIH, 2008). Special education and social skills training are a few examples of treatment options to help individuals develop the proper life and social skills to function daily (NIH, 2008). Treatment involving physical activity as part of an exercise regimen may be beneficial to enhance mood stability, decrease behavior issues, enhance cognitive functioning, and improve overall quality of life for mentally retarded and institutionalized populations.

*Exercise Effects on Mood and Behavior*

Berger, Pargman, and Weinberg (2002; as cited in Gould & Weinberg, 2007) stated that mood can be defined as a “host of transient, fluctuating, affective states that can be positive or negative” (p. 402). Regarding mentally retarded populations, fluctuations in mood can often be extreme and frequent, similar to the abrupt mood changes of a young child. Exercise may be beneficial pertaining to mood regulations and aid in controlling extreme and frequent mood swings. Psychologists and psychiatrists researching nonmentally retarded individuals discovered
that exercise is one of the most effective techniques for changing a bad mood and is positively related to positive mood, general well-being, and relatively infrequent episodes of anxiety or depression (Gould & Weinberg, 2007).

Steinberg et al (1998) conducted research to find the effects of four different types of exercise classes (beginners’ aerobics, advanced aerobics, body funk [dance], and callanetics [a muscle strengthening exercise modeled after ballet technique]) on the mood of students participating in the classes. Participants voluntarily took part in these classes once a week over 6-7 weeks (Steinberg et al., 1998). The number of students in each class ranged from 44-63 years (M=54.25 years) and attendance of all classes was very consistent across all groups (Steinberg et al.). The surveys contained 24 positive mood adjectives (e.g. alert, energetic, happy, etc…) and 23 negative adjectives (e.g. anxious, exhausted, tense, etc…), and participants completed each survey before and after class through self-reporting the adjectives which described them best (Steinberg et al., 1998). The results indicated that exercise produced an immediate increase in positive mood, both by increasing self reporting of positive feelings and decreasing reporting of negative feelings across all groups (Steinberg et al.).

Results from the study show the positive effects various types of exercise can have on mood. If the general population can experience these mood enhancing effects, then the mentally retarded population could also gain from them. The sensitivity of the mentally retarded population concerning mood fluctuation could be greatly reduced by the implementation of exercise programs, and experiencing enhanced mood may cause a decrease in overall behavioral problems.

Gould and Weinberg (2007) report that exercise not only has a positive effect on emotional stability, self-control, and intellectual functioning, but also decreases the frequency of
anger, anxiety, hostility and tension. When applied to the mentally retarded population, all of these effects would potentially result in a decrease of problem behavior. Rourke and Quinlain (1973) stated that many borderline mentally retarded children suffer from problem behaviors that may stem from depression, over-involvement in fantasy, low levels of cognitive functioning, and high levels of hyperactivity with no outlet. Many institutionalized mentally retarded populations are aerobically inactive and portray cognitive and behavioral difficulties, so the benefits of an exercise program could be extremely beneficial in reducing problem behaviors. The lack of activity may hinder the expulsion of excess energy resulting in individuals who act out not only as a way of expressing themselves but also as a way of releasing energy.

Exercise Effects on Quality of Life

Kaplan (1994; as cited in Gould & Weinberg, 2007) describes quality of life as “one’s behavioral functioning ability, or being able to ‘do everyday stuff’ and living long enough to do it” (p. 408). Individuals who are physically active report being in better health, having more stamina, feeling a more positive attitude towards life, and increases in the amount of sleep they get (Gould & Weinberg). The amount of physical activity an individual participates in is a predictor of better quality of life. Although many people think factors such as income, education, marital status, and age are significant predictors of quality of life, they are not. Among many factors that contribute to the quality of life, exercise can create elated mood states, as well as decreased levels of anxiety and depression, both of which would contribute to increasing the quality of life for mentally retarded populations (Gould & Weinberg).

Exercise Effects on Cognitive Functioning

In 1936, Piaget presented the idea that motor development is important to the development of intelligence in children (Gould & Weinberg, 2007). Although research is still
ongoing to validate this assumption and findings have been somewhat inconsistent, some
research supports this relationship between exercise and cognitive function ability (Gould &
Weinberg). In a study by Borght et al. (2007), after performing 14 days of exercise, rats were
reported to have shown increased rates of information acquisition, improved retention of prior
learned information, and facilitated reversal learning while completing a maze. Prior research
and reviews have also shown that exercise has a modest effect on cognitive functioning in
humans (Etnier et al., 1997; Thomas, Landers, Salazar, & Etnier, 1994; as cited in Gould &
Weinberg, 2007).

Dupper (1990) performed a study by providing a 10 week exercise program for a group
of 10 mildly mentally retarded children (boys, n=4; girls, n=6). The students were selected from
a retardation center and were scheduled to participate in 60 minutes of physical activity 3 times a
week. The original group was split into two subgroups: an experimental group and a control
group. While the experimental group participated in the experimental exercise program, the
control group participated in the normal motor development classes they had previously been
taking (Dupper). While the study resulted in many physiological changes (weight loss, an
increase in cardiovascular efficiency, and lower BMI), there was no significant change in
behavioral levels (as reported by the children’s teachers) or cognitive functioning (Dupper).
More change could possibly be seen if the exercise regimen was conducted for longer than 10
weeks. This is because chronic exercise in comparison to acute exercise shows greater effects on
cognitive performance (Gould & Weinberg, 2007). Another cause of the ineffectiveness of the
program on improving cognitive functioning could be that it focused solely on cardiovascular
exercise. Colcombe and Kramer (2002; as cited in Gould & Weinberg) found that fitness
training combined with strength and flexibility training had a greater positive effect on cognitive abilities than aerobic exercise alone.

The small amount of prior research on the benefits of exercise for mentally retarded population shows a need for more research to be completed (especially concerning cognitive functioning). The need for further research led to the proposed project for examining the benefits of an exercise program for mentally retarded populations.

Methods for the Proposed Project

The population for the project would include four groups (groups 1-4) of institutionalized children all at the same level of mental retardation. Each group would consist of ten individuals meeting the standards for participation.

Each group would follow a 24 week program meeting 3 times a week for 60 minutes. Group 1 would participate in strictly aerobic activity. Group 2 would participate in aerobic activity and strength training. Group 3 would perform only strength training, and group 4 would remain as the control group only performing the motor development classes provided originally from the institution.

Each group prior to the program will have their weight taken and cognitive abilities assessed through testing using the Cognitive Abilities Test battery (CogAT). Staff members will conduct reports of observable mood fluctuations as well as behavioral issues hourly.

This will be both a within and between subjects experiment focusing both on changes in weight, cognitive abilities, mood patterns, and behavioral issues before and after exercise and from beginning to end of the experiment, as well as comparison between groups to discover if different forms of exercise produce different outcomes. The different types of physical activity were chosen in order to understand their different effects on health. All categories would include
using only activities adapted to the abilities of the mentally retarded populations in order to reduce risk of possible injury (e.g. instead of regular push-ups use wall push-ups and help the individuals to use proper technique).

**Hypothesized Results**

After reviewing prior research it is expected that a significant number of all groups will show physical improvements (decreased weight, improved physical performance), as well as an increase in mood and a decrease in problem behaviors. Assuming that a longer duration of the program meets the threshold of exercise needed to produce significant cognitive improvements, groups 1-3 should show increased cognitive performance during application of the CogAT. A possible outcome may be that only group 2 would improve, because this group was administered both aerobic and strength training. Colcombe & Kramer (2002; as cited in Gould and Weinberg) described greater positive effect on cognition when both were performed.

As described by Gould and Weinberg (2002) exercise has reportedly shown significant positive effects on mood in non-mentally retarded populations. Therefore, these effects could also be seen in mentally retarded populations, and be used to help regulate the frequent mood fluctuations of these populations. Steinberg et al (1998) also found that exercise positively effects mood after participants took part in a physical activity regimen. If these effects are also seen in mentally retarded populations, the decreased probability of negative mood and mood fluctuations would increase the quality of life for these populations and aid those who help them daily.

Many individuals living with mental retardation exhibit numerous problem behaviors, which create a difficult environment for guardians and other individuals to help these populations with daily tasks. These behaviors, often times, stem from depression, low levels of
cognitive functioning, and high levels of hyper activity with no outlet (Rourke & Quinlain, 1973). Providing these individuals with an outlet for high levels of energy would help reduce the frequency of problem behaviors. The physical activity may also decrease levels of depression by increasing mood, which affects depressive symptoms.

Conclusion

More research on benefits of exercise for mentally retarded populations would be beneficial for many groups. Healthcare professionals, care givers, and institutions who provide treatment and adapted programs for mentally retarded populations could provide better information and create better treatment plans for these individuals. The individuals themselves would experience numerous physiological benefits including: increased quality of life, increased life span, better physical fitness, and an increased feeling of wellness. The psychological benefits experienced would allow for increased levels of cognition, enhanced mood and mood stability, increased emotional stability, increased self control, decreased feelings of anger, confusion, and hostility, less frequent episodes of depression and anxiety, and less problem behavior.

The proposed experiment would provide results on the correlation between exercise and its effects on mood, behavior, and cognitive abilities in mentally retarded population. The research will also go one step further in determining which type of physical activity is most effective when treating mentally retarded populations.

There are some limits to the proposed experiment. External validity is limited, because the experiment is specific to institutionalized mentally retarded populations and would need to be conducted elsewhere to find results pertaining to the non-institutionalized population. Also, the long duration of the exercise sessions may prove to be difficult for mentally retarded population
as they typically have low attention spans. The long duration also poses a problem as members
of institutions may be transferred to other facilities due to behavior problems, insurance issues,
or guardian preference. The experiment may also prove to be very costly as it runs a long
duration with many groups who require different certified instructors.
References


