Fitness Changes After an 8-Week Fitness Coaching Program at a Regional Youth Detention Facility

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Abstract
A Surgeon General’s report states that there is a favorable relationship between exercise and chronic disease. Research suggests that exercise programs for elderly inmates may have a positive effect on the number of infirmary visits, which in turn may have a long-term effect on inmate health care costs. This exploratory descriptive double case study sought to add to the minimal information in peer-reviewed research journals by examining the effects of fitness coaching on two juveniles at a youth detention facility in Southwest Montana. The results showed that both participants made fitness improvements following the 8-week program and both perceived positive effects on self-concept and overall sense of well-being from participating in this program.

Keywords
fitness, coaching, juvenile detention

Introduction
The relationship between physical activity and health is clear. Even those who participate only in moderately intense activities have lower mortality rates than those who are least active. This is true of the general population and incarcerated individuals alike. Since the early 1990s, experts have concluded that medical science has done all that it can for chronic-lifestyle-related disorders, and that additional expenditures for health care will not produce further financial benefits that could be achieved if every American improved their health simply by becoming more physically active (Gibbons & Stoedefalke, 1995).

The applied health science program at Montana Tech has worked with Reintegrating Youthful Offenders, a juvenile detention facility, for several years. The service–learning relationship consists of students within the program, who assess and report fitness levels of the juvenile detainees and encourage healthy behaviors that will positively affect the fitness tests administered. Over the

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last 6 years, the Tech students have been assessing and tracking fitness levels of about 70 juveniles.

Health and fitness coaching is a relatively new area that differs from the more traditional approaches of personal training and physical education in several ways. Health and fitness coaching allows for motivational interviewing, goal setting, and education so that the participant is empowered to make the necessary changes that will lead to improvement in designated health categories. In contrast, personal training focuses strictly on helping people exercise.

**Study Questions**

1. Will health and fitness coaching have an effect on physical fitness levels of youth detained at a juvenile detention facility?
2. Will health and fitness coaching have an effect on the following specific components of health-related fitness:
   
   - i. body mass index (BMI),
   - ii. weight,
   - iii. blood pressure,
   - iv. body composition,
   - v. 1-minute timed sit-up,
   - vi. push-up test to failure,
   - vii. 30-wall touch test, and
   - viii. pull-up test to failure.

The first Surgeon General’s report (U.S. Department of Health and Human Services [USDHHS], Centers for Disease Control and Prevention [CDC], & National Center for Chronic Disease Prevention and Health Promotion, 1996) on physical activity and health stated that there is a favorable relationship between exercise and chronic disease. Cardiovascular diseases are the leading causes of death in our society. The CDC’s National Center for Chronic Disease Prevention and Health Promotion states that one in every four American adults is inadequately active. Inadequately active is defined as getting some exercise but not enough to affect morbidity or mortality rates. Additionally, exercise has a positive effect on other significant health issues prevalent in society and correctional settings. Evidence shows that exercise not only can enhance one’s health but also has a positive effect on well-being and quality of life. Research shows that regular physical activity is associated with a decreased risk for colon cancer, noninsulin-dependent diabetes mellitus, osteoarthritis, osteoporosis, and obesity (American College of Sports Medicine [ACSM], 2006). These are important statements given that correctional systems must pay for the health care of those incarcerated.

Research suggests that exercise programs for elderly inmates may have a positive effect on number of infirmary visits, which in turn may have a long-term effect on inmate health care costs (Amtmann, Evans, & Powers, 2001, 2002). Will an 8-week fitness coaching program have a positive effect on the juvenile offender? That is what this project sought to answer.

**Literature Review**

A review of current literature yielded little research on the effects of coached fitness training and even less on the effects of coached fitness training in a correctional setting. Rice, Thombs, Leach, and Rhem (2008) conducted a study that focused on successes and barriers of a youth weight management program. The program used in this study used a combination of exercise and nutrition coaching as well as behavior change counseling. It is well documented that being overweight causes
a significant increased risk of health effects ranging from high cholesterol and diabetes to a variety of pulmonary diseases and heart disorders. Rice et al. (2008) designed their program to include exercise, nutrition coaching, and behavior change counseling that would take place over a 12-month period. Baseline biometrics were measured during the initial session and then monthly to track results over the term of the program. Results documented an increase in sit-ups, push-ups, and a timed 1-mile walk/run regardless of the changes in BMI assessments. The researchers concluded that the largest barrier was generating the drive for children in need to participate in such programs. Rice et al. (2008) also stated that more than 16% of children between the ages of 7 and 17 years have a BMI that ranks in the 95th percentile or greater and 15% have a BMI between the 85th and 95th percentile, which represent an obese to overweight population, respectively.

Another study focused on the benefits of exercise training in Spanish prison inmates. Poor health status and an increased risk of developing chronic debilitating conditions are as common in Spanish inmates as they are in American inmates (Pérez-Moreno et al., 2007). It is common knowledge that exercise training can improve overall health and mental well-being. Perez-Moreno suggests that supervised exercise training can improve the overall physical fitness of incarcerated people. Many inmates suffer from chronic diseases that can be associated with muscle wasting and low functional capacity. The study focused on the overall effects of coached exercise related to cardiorespiratory fitness, upper and lower muscular strength and endurance, muscle mass, and quality of life of adult prison inmates coinfected with HIV and hepatitis C virus and enrolled in a methadone maintenance program. Overall results of a 4-month fitness training regimen yielded evidence that quality of life significantly increased. Other significant effects of this program include increases in estimated body muscle mass and overall strength and endurance. The researchers concluded that a supervised cardiorespiratory program combined with resistance training improves the overall physical fitness of incarcerated people.

Tidwell et al. (2004) focused more on a community-based health promotion and fitness program for the elderly, implementing nurse health coaching, training in self-management of chronic illness, and a fitness program. The health coaching team consisted of a nurse health coach, a social worker, and a geriatrician. A total of 255 persons were recruited into the program. Eligibility criteria included having one or more qualifying chronic health condition, being 65 years or older, having membership in a participating health plan, and being a member of a long-term care insurance policy. Results showed that during the 7-month program there was a direct correlation in the reduction of hospital use and improvement in health status.

Amtmann, Kukay, Gallagher, and Spath (2005) conducted a 7-week coached training program that assessed the effects of musculoskeletal fitness of children enrolled in a judo program compared to grade school children with no coaching instruction. The study consisted of pre- and post-measurements that included push-ups to failure, pull-ups to failure, and a 1-minute timed sit-up for judo participants. The grade school students completed the 1-minute timed sit-up test and the push-up test to exhaustion, but the school did not have a pull-up bar to test for pull-ups. Both groups were encouraged to participate in physical activity at home, but the judo group had weekly meetings and the coaches were able to provide ongoing support and instruction. Seven weeks later, the students were given the same test. The judo participants increased their average performances in pull-ups, sit-ups, and push-ups by 0.7, 3.7, and 6.6 repetitions, respectively, while the grade school students decreased in their average sit-up performance by 1.3 repetitions and improved their average push-up performance by 0.2 repetitions. Although this was a descriptive study and no causal relationships can be derived, the results imply that coached training can be an effective method for improving cardiovascular and musculoskeletal fitness.

The Surgeon General’s report (USDHHS, CDC, & National Center for Chronic Disease Prevention and Health Promotion, 1996) also stated that physical activity may relieve symptoms of depression and anxiety and this is an important consideration for corrections officials. Many reviews have
shown that physical activity had a direct correlation with improvement in depression, anxiety, and resilience under stress (ACSM, 2006). An improvement in mood may result in fewer problems with inmate violence toward other inmates, staff, or to the general citizenry upon release.

**Methodology**

**Experimental Approach to the Problem**

This was an exploratory descriptive double case study that sought to add to the minimal information in peer-reviewed research journals regarding the effects fitness coaching may have on incarcerated populations.

**Participants**

The participants were two male youth ages 16 and 19 at a juvenile detention center who voluntarily participated in a fitness assessment. Many youth participated in the preassessment, and initially eight volunteered for the 8-week coached training program. However, in the first 4 weeks of the program four participants withdrew due to physical confrontations that arose during a separate event and other behavioral reasons. They were replaced with new volunteers; however, these new volunteers did not undergo the preassessment and were not included in this case study.

**Measurements**

Resting measurements included resting heart rate, resting blood pressure, height, weight, waist girth, and skinfold thickness (shoulder blade and thigh). Fitness measurements included pull-up test, 1-minute timed sit-up test, and push-up test. Flexibility was measured using a sit-and-reach test. Cardiovascular fitness was measured using a 30-wall walk/jog test.

**Data Collection Procedure**

Following the fitness assessment, the youth were offered an opportunity to participate in the 8-week fitness coaching program. The program took place once per week and had two components: motivation and exercise. The hope was that the least fit individuals would consider volunteering for this program. The program goals were to improve fitness assessment performance from one assessment to the next.

The coaching consisted of a weekly meeting with the participants. This 1-hour meeting began with a 15-minute group discussion of the obstacles to developing and maintaining fitness in a detention facility and how the individuals could best overcome these obstacles during the rest of the week. The remaining 45 minutes were spent with the coach leading/participating in group exercise. Following each session, the researcher recorded participants’ statements to develop a sense of their subjective perceptions of the program.

The opening session consisted of an introduction of the program to the participants. The research project’s purpose was discussed and questions or concerns were addressed. It was stated that our goal was to improve each individual’s overall health and fitness. The group met only once per week and the youth were instructed to continue their training during the rest of the week.

The youth were required to write a personal health and fitness goal, something that they wanted to achieve through this program. The participants’ fitness goals included the following:

1. weight loss,
2. improve pull-up performance,
3. improve push-up performance,
4. overall health and fitness improvement, and
5. improve motivation to exercise.

After the discussion of the participants’ health and fitness goals, we led a discussion of potential barriers, which included the following:

1. “We eat too much.”
2. “We don’t have much gym time.”
3. “We don’t have anyone to tell us what we should be doing to lose weight.”
4. “We don’t have a weight room.”

With these goals to guide us, we proceeded through the 8-week program. Prior to each training session, the goals, barriers, and possible solutions were discussed.

The workout area included a full-court basketball gym, mats, a pull-up bar, and a dip bar. Each workout began with a 5-minute warm-up. The youth then rotated through a variety of exercise stations, including sit-ups, pull-ups, dips, and jogging. The fitness coach also led the youth in several physical activity games, including basketball and variations in basketball games; caterpillar; and crab walks, ducks, and gators. During coaching sessions, participants were reminded to keep moving as much as possible. After each session, participants were asked to provide input and suggestions for future coach training days.

Quantitative Results

Two youth underwent an initial fitness assessment, completed the 8-week coaching program, and took part in a postprogram fitness assessment. Each participant showed improvements in different areas (see Table 1). Subject 4 failed to show improvement in several areas, including overall weight, waist girth, and skinfold. He did improve, however, in the 30-wall touch test. He also showed improvement in the push-up test. During the initial assessment, Subject 4 was able to complete only 25 modified knee push-ups and 0 standard push-ups; however, he was able to complete 15 standard push-ups during the postprogram assessment.

<table>
<thead>
<tr>
<th>Subject 4</th>
<th>Subject 49</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
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<tr>
<td></td>
<td>Pretest</td>
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<tr>
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<td>72</td>
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<tr>
<td>Pull-up</td>
<td>0</td>
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<td>35</td>
</tr>
<tr>
<td>Push-up to failure</td>
<td>25 Modified</td>
</tr>
<tr>
<td>30-Wall touch timed run</td>
<td>Completed 22 in 5 min</td>
</tr>
<tr>
<td>Sit and reach test</td>
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</tr>
</tbody>
</table>

Table 1. Pre- and Postprogram Assessment Results.
Subject 49 made improvements in several areas including weight, thigh skinfold, pull-up, and push-ups, as well as the 30-wall touch timed run test. Subject 49 went from a pretest weight of 215 lbs to a posttest weight of 206 lbs. His preprogram 30-wall touch run was completed in 3 minutes and 52 seconds, while the posttest time of 3 minutes and 17 seconds showed an improvement of 35 seconds. He was unable to complete a single pull-up during pretesting but was able to complete 2 pull-ups during posttesting. Subject 49 also showed an improvement in the push-up test. Initially, he complete 10 modified knee push-ups and 0 standard push-ups, but following the program he was able to complete 16 standard push-ups.

Qualitative Results

Following each coaching session, participant perceptions of the program were recorded during an informal interview. Each participant also completed an exit interview with the researcher. Bogdan and Biklen (1992) discussed the concept of the researcher who has been involved with the participants for a prolonged period of time being able to extract more rich data if the researcher has developed a good relationship with the individual. They also state that good interviews are those in which the participants are at ease and talk freely about their points of view. Rich data reveal the participants’ perspectives and are filled with details and examples in their own language (Bogdan & Biklen, 1992). Previous research has shown that if survey respondents know and trust the individual conducting the inquiry, their responses will be more genuine (Wagman, Curry, & Cook, 1995). So both juveniles were allowed to describe their experience in their own words.

The analysis of data from the two participants in this study yielded three major themes: perceived improvements in physical fitness, improvements in self-concept, and an enhanced sense of well-being. Direct quotes are used to illustrate themes and categories. Given the population from which this sample emerged, quotes reflect the vernacular of the penal system and are depicted verbatim in this section; no attempt was made to correct grammar or syntax.

The two inmates perceived an improvement in their physical fitness.

I think this group is helping me out a lot more than when I started. I can do more push-ups than when I first started out, and I don’t have to do them on my knees anymore. I can move a little faster than normal. (Subject 4)

I liked the group that every Tuesday I would look forward to this group. It helped me with my running and helped me learn more stuff on how to work out on my free time. I improved on my workout skills and now I can run longer, do more push-ups and more sit-ups. (Subject 49)

Subject 49 stated, “I like the whole thing because I need it; so not much I did not like. I feel good about it [coached training program]. I just wish it could continue.” He also made direct reference to his weight, “I felt at the start of this program that I was really bad at exercise. I started it weighing about 215 and now I weigh about 206, so I felt good about that.”

Other statements the participants made included:

What I got out of this was working out, getting sweaty and sore. I liked running around getting sweaty. I feel better physically and mentally. It was fun and hard. On a scale of 1 to 10 (1 being the worst I have ever felt and 10 being the best) I feel like I went from a 3 to a 9.

I feel like I am able to deal with my anger better, and I’m not as angry as I use to be before I got to start working out.

I really like this group and hope to join it again when it starts back up. There is nothing that I didn’t like about this group. I really really like it. Physically I feel like I started out at a 3 and now I am at a 6. Mentally I was at a 4 and am now at an 8 (based on a scale of 1 to 10, 10 being the best the participant ever felt).
What I liked about this group is I get a chance to take a break from others and I get to exercise. I feel that my physical appearance is better and I feel a lot more confident in my capabilities. I feel I’m able to run longer and my stress levels are going down. I’m able to do more reps and I’m starting to watch what I eat and drink. I like that we get a chance to work out and set our goals.

I don’t like the fact that it only last 1 hour each session.
I wished it could be longer.

Discussion

The quantitative and qualitative results clearly show improvements in physical fitness for one participant as well as a subjective perception of improvements in physical fitness for both participants. One reason Subject 4 may have failed to show improvements in certain areas may relate to the medications this youth was taking. The medications and their side effects include (Deglin & Vallerand, 2009, p. 368, 472):

Zyprexa (Zydis): somnolence, insomnia, dizziness, hypertension, increased appetite, vomiting, hyperglycemia, weight gain, joint pain, sweating.
Trazodone: drowsiness, dizziness, nervousness, fatigue, confusion, tremor, weakness, anger, nightmares, headache, orthostatic hypotension, tachycardia, hypertension.

Considering the youths’ statements, it is apparent that the program had a positive impact on self-concept as well as overall sense of well-being. During our initial visit, we observed that individuals of lower fitness levels moved to the sides of the gym and did not participate in any physical activity. This could have been due to a negative self-concept and lack of self-confidence, a lack of respect by their peers, or a combination of these.

Throughout the coached training program Subjects 4 and 49, individuals who normally remained inactive and on the sidelines, now actively participated in activities with other juveniles or performed exercises on their own without worrying about what the others thought of them. These changes in active participation were noted not only through informal interviews throughout the coached training program but also by the staff at the facility.

Coached training programs such as this one could also play an active role in creating a better environment not only for the youth but also for the facility staff. Subject 4 wrote, “I’m not as angry as I use to be before I got to start working out.” This youth indicated that he is now better able to cope with his anger by filtering it into a constructive workout program. Creating a program such as this one is important not only for physical health but for mental well-being as well. Interpersonal conflict in detention facilities is a reality; providing opportunities, such as this coached training program, for incarcerated individuals to improve their sense of well-being may enable them to deal with anger issues in a positive manner. Thus, this kind of program may have an effect on not only the individual but also other youths and the facility in general.

Recommendations

In light of these relationships, correctional administrators and staff should play an active role in programming to encouraging healthy behaviors. ACSM has established guidelines for promoting health through physical activity for cardiorespiratory and musculoskeletal components of fitness (ACSM, 2006). For cardiorespiratory fitness, the ACSM recommends activities that can be sustained for a prolonged period of time, including walking, jogging, stationary cycling, rope jumping, or the like. The youth should have the opportunity to engage in these activities 3 to 5 days per week for 20 to 60 minutes per session. However, sometimes the less fit individuals become even less fit because they are not included in the typical team sport activities of open gym.
For musculoskeletal fitness, the ACSM recommends performing 8 to 10 separate exercises that train the major muscle groups. A major goal should be to develop the body in a balanced manner, rather than just exercising the chest and arms as we see so many incarcerated individuals do. Performing one set of 8 to 12 repetitions to the point of volitional fatigue 2 to 3 days per week is effective in developing musculoskeletal fitness. Correctional administrators and staff should make sure that every youth has the opportunity to participate in musculoskeletal fitness developing activities. These activities are of special benefit for less fit youth who may be forced out of the strength/fitness area during crowded gym times.

As in the general population, incarcerated youth have the opportunity to exercise; however, most are not motivated to do so or are unaware of what to do. This can be addressed by implementing fitness coaching programs. Including modules such as why exercise is important physically and mentally, how and why to exercise for cardiorespiratory efficiency, and how and why to exercise for musculoskeletal fitness. If the youth are educated about why they should be exercising, then maybe more of them will be more motivated to begin and continue an exercise program. Fitness coaching should consist of helping the youth to develop personal fitness goals and should ensure that each youth receives direction and feedback regarding how to accomplish these goals.

In conclusion, there are many reasons why correctional administrators and staff members should provide the opportunity for and encourage youth to participate in healthy activities. The Surgeon General’s report is very clear about the benefits of regular physical activity. The ACSM’s recommendations are straightforward and easy to understand. Educating and coaching may be the key to motivating youth and possibly improving their overall health.

Suggestions for Future Research

Future research should look further into medication side effects and at what point these side effects were noticed as well as when the inmates began taking these medications. Researchers should try to obtain a larger sample group to eliminate the effect that participant dropout has on the results. Future research could implement facility staff training in such programs and explore the combined perceptions of the inmates as well as the staff.

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Author’s Note

This article is dedicated to Jake Kukay who left us on August 7, 2015, at the tender age of 32. He lived, he loved, he laughed, and he will be missed.

Declaration of Conflicting Interests

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References


