

ORIGINAL ARTICLE



A Case Study of the Quality of Life and Life Satisfaction of Children and Youth Participation in a Physical Activity Program for the Height Increase

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ABSTRACT

Background. Height plays a crucial role in boosting a person's persona. **Objectives.** To study the quality of life and the life satisfaction of children and youth participation in a physical activity program for height increase. **Methods.** A qualitative design using semi-structured interviews with 20 key informants from 4 groups which consisted of 5 key informants in each group as follows; 1) Group aged from 6-11 years old, 2) Group aged from 12-14 years old, 3) Group aged from 15-17 years old, 4) Group aged from 18-24 years old (6-24 years old) those who attended the physical activity program for the height increase at least than 6 months. **Results.** It was found that all key informants were very satisfied with a physical activity program for the height increase. **Conclusion.** Most of the participants had an improved quality of life in seven dimensions and well-being after participating in a physical activity program for the height increase.

KEYWORDS: *The Quality of Life, Well-Being, The Life Satisfaction, The Physical Activity Program, The Height Increase.*

INTRODUCTION

There was concrete proof that exercise was beneficial toward children and youth health as one of the articles investigated that exergames and aquatic exercises improved weight loss and lung function in obese children (1). Another article found that the psychological influences the physical performance of those children and youth who were athletes (2). Furthermore, exercising is also beneficial for those who aim to increase their height (3).

Height plays a crucial role in boosting a person's persona. DNA determines a person's height. However, environmental factors, such as healthy eating, and exercise could affect the growth. As children get older, they need good nutrition, and plenty of exercise to help their bodies make the growth hormones. Teenagers experience a growth spurt during puberty. After that, their bones stopped growing, and they would not get any taller (4, 5).

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There were a few things for increasing the height. Although genetics largely determines height, it can make the dietary changes that helped to grow the most height potential, such as, 1) Doing the basic lengthening stretches 2) Improving the posture and 3) Making healthy lifestyle changes (6).

Especially, at the ages 6-17 years were a period of rapid growth. Regular exercise would help them develop into a fit, tall, and strong body. They should exercise regularly for at least 60 minutes per day (continuing for 10 minutes or more) which focus mainly on aerobic exercises, such as running, cycling, jumping jacks, jumping rope, aerobic dancing, swimming, basketball, football, etc., together with exercises to increase muscle strength and endurance, such as sit-ups, Push-ups, planks, squats, pull-ups, dumbbell lifts, etc., and exercises to increase flexibility such as exercise, muscle stretching, yoga, etc (7). Also using nutrition could be an important trigger to develop the overall health of the youth athletes (8).

One of the popular innovations for the height increase was the leg lengthening. This was an intense and expensive process. It became more popular and accepted in the last five years, according to Dr. Shahab Mahboubian, a surgeon at the Height Lengthening Institute in Burbank, California, who performed Alex's operations (9).

Currently, in Thailand, there is an innovation institution named the Tallsters that was established to solve the height problems by using physical activity as the intervention for height increase which had 4 steps as follows: 1) Consultation with a specialist doctor 2) Total Body - stimulating the body's mechanical function system and bone structure to increase work efficiency and joint strength by a team of specialized medical experts structural analysis adjust the personality to a point of balance. Conducive to growth (15 minutes). 3) Aerodynamic Exercise –this method was to stimulate Growth Hormones secreted into the bones and joints with the 45 minutes length 4) Long Legs System was to increase the space for bone stretching with an innovative machine that stimulated the vibration in the bones and joints which emphasized on the leg bones muscle relaxation including with creating a blood circulation mechanism with the 30 minutes

length. Furthermore, every step was controlled by the doctors and experts.

Most of the previous papers focused on many areas in this issue, for example, the first one, Sun et al. studied the title of "Exercise combined with lysine-inositol vitamin B12 promotes height growth in children with idiopathic short stature". This study aimed to systematically determine the effect of exercise combined with lysine-inositol vitamin B12 (VB12) therapy on the height of children with idiopathic short stature (ISS). Results showed that regular and moderate stretching exercises combined with lysine-inositol VB12 can effectively promote the height growth of children with ISS (10). The second one, Alves and Alves studied the title of "Effects of physical activity on children's growth" which describes the current scientific knowledge on the effects of physical exercise on the growth of children and adolescents since intrauterine life. Results indicate that physical exercise is safe for the child, from fetal life to adolescence. Physical exercise did not appear to impair the child's linear growth and contributes to the ideal shaping of bone and muscle tissues, ensuring possible beneficial effects throughout life (11). The third one, Annas and Sumartiningsih studied the title of "The relationship between physical activity and peak height velocity in children aged 9–11 years". The purpose of this study was to examine the relationship between physical activity and the age of peak height velocity in children aged 9-11 years. Results demonstrated that physical activity affects many things, such as higher height in soccer players with a lower average age (12). The last one, Magnusson and Pope studied the title of "Body height changes with hyperextension". The purpose of this study was to determine if the overall body height, as measured by a stadiometer, could be increased by brief episodes of hyperextension rather like a stretch that people frequently employ when arising. It was found that 15 s of hyperextension caused a significant temporary height increase (13).

The previous studies showed that none of them used to study by using the Quality of life and life satisfaction as the intervention for measuring the height-increasing program by using physical activity at all. Therefore, the current study attempts to fill this gap in the literature by studying the quality of life and the

life satisfaction of children and youth participation in a physical activity program for the height increase which may have a positive impact on the well-being of participants.

MATERIALS AND METHODS

This study utilized a qualitative design using semi-structured interviews.

Participants. They consisted of 5 key informants in each group as follows; 1) Group of the age from 6–11 years old, 2) Group of the age from the age of 12–14 years old, 3) Group of the age from 15–17 years old, 4) Group of the age from 18–24 years old. All of them joined this program at least 6 months continuously, and their scores gained from answering the WHOQOL questionnaire were at least 96 out of 130. Purposive sampling also was used for those key informants who reached the top 5 highest scores in each group in the test of the WHOQOL questionnaire for entering the interview process.

Instrument. The semi-structured interviews are based on the measurement of quality of life (WHOQOL) (14). The study of the reliability of the instrument found that it had good internal consistency as Cronbach's alpha coefficient was 0.8406 and the validity coefficient was 0.6515 when compared to the officially endorsed Thai version of the WHOQOL-100 questionnaire invented by the World Health Organization (WHO) (15). It was adapted in seven domains, and this research also approved the ethics by the Office of the Committee for Research Ethics (Social Sciences), Faculty of Social Sciences and Humanities, Mahidol University.

Analysis. Content analysis.

RESULTS

The findings from those 20 key informants can be shown in the [Table 1](#).

Table 1. Research results

Research questions	Results
First domain: Health	
1. After joining the program, has your overall health improved?	Most of key informants said that their health was better due to regular exercise and eating nutritious food, resulting in better sleep as well, such as one of them said that <i>"My health was better. I could also sleep easier and more comfortably."</i>
2. After joining the program, did you have more satisfaction with your figure?	Most of key informants said that they were very satisfied with their figures because they had a clearly taller figure, such as one of them said that <i>"I'm satisfied because my figure, health, and personality have improved."</i> Although there were a small number of key informants reporting that their height did not increase much, but they still feel satisfied with their figures in a positive direction, such as one of them said that <i>"I was very satisfied with my figure. I was not too fat or too thin"</i>
3. After joining the program, did you feel fresher or more energetic?	Most of key informants said that they have more energy or liveliness in doing various activities, including doing exercise. This program also helped reduce stress, such as one of them said that <i>"Feel more energetic and have more energy to live your life and be able to read longer."</i> However, some of them couldn't feel the change since they did exercise regularly, such as one of them said that <i>"I didn't feel change. I regularly played football. My physical fitness quite well."</i>
Second domain: Finance	
1. After joining the program, did you believe that your better figure could bring you better opportunity into your life, including earning more income?	Most of key informants said that the taller and better-shaped figure could bring them the brighter future and also could earn more income for them, such as one of them said that <i>"You could use your figure or personality to apply for the job you want because you could be the employer's first choice."</i> However, some of them have never thought about earning money since they're still young and wanted to focus on their education, such as one of them said that <i>"I have never thought about earning money. I only wanted to put my all concentration to my study."</i>
Third domain: Society	
1. After joining the program, did you have more pleasant when participating in social events?	Most of key informants said that they were pleased because joining this program truly had positive effect to their confidence, resulting in more enjoyable feeling when they participated in social events, such as one of them said that <i>"Of course, I am so pleased because I have the better figure so I feel more confident when I am participating in the social events"</i> However, some of key informants said that they normally did enjoy participating in social events. Moreover, they were studying in the international environment which discrimination among students was unacceptable. Therefore, they could not notice the

Research questions	Results
	changes after joining the program, such as one of them said that <i>"Normally, I like participating in social events such as party. It is not related to my height. Furthermore, the international school normally do not have the discrimination issues. It doesn't really matter if you are high, white or black. It has no problem at all. It's not about body shape, it's more about habits because I like to have conversation and make new friends."</i>
Forth domain: Self-confidence	
1. After joining the program, did you have more self-confident?	Most of key informants said that they had more self-confident as their figures were better than before joining this program, such as one of them said that <i>"I have more self-confident because I got better shape and personality"</i> However, some of key informants said that they could not feel the changes of their figures as they were insecure persons, such as one of them said that <i>"I cannot feel the differences because I'm quite not confident in myself."</i>
٢. After joining the program, did it make your life more completed?	Most of key informants said that joining this program could fulfill their lives with the height increased, personalities developed, and relationship with others improved. This also was the way to spend your spare time effectively, such as one of them said that <i>"Of course, I decided to join this program because I need to possess the good-looking figure and taller. Once I got what I ever wanted, I felt like my life was fulfilled and was more completed."</i> However, some key informants joined the program for a specific reason that was not primarily focused on increasing height, such as doing more physical activities, such as one of them said that <i>"Actually, I barely did exercise or played sports so my family applied this program for me so I could do more physical activities. However, I would be glad if my shape could be better from joining this program."</i>
٣. After joining the program, did it make feel valuable and gain more respect from those around you?	Most of key informants said that joining this program could make them feel more valuable as they had better shape, personality, and had more courage to speak confidently in front of many people, such as one of them said that <i>"Once I was taller and had better personality, I felt I had more courage and confident to express what I thought to other people. It made me feel like I had more valuable and got more respect from others more than before."</i>
Fifth domain: Leisure activities	
1. After joining the program, did you have more pleasant with your leisure activities?	Most of key informants said that they could feel more enjoyable and pleasant with your leisure activities, such as playing sports, after joining this program as they were stronger and more energetic, such as one of them said that <i>"I love playing football. Once I was taller and more physical fitness, I was better with header and felt more enjoy when I played it."</i>
Sixth domain: Relationship in family	
1. After joining this program, did it make you more satisfied with family relationships?	Most of key informants said that they were satisfied with relationship within their families because they got full support from their families for participating in this this. Moreover, their relatives could notice their better-changed figures after joining this program, such as one of them said that <i>"I was so happy because my families gave 100% support when they knew I wanted to join this program. This made the stronger bond between family members."</i>
Seventh domain: Relationship with friends	
1. After joining this program, joining this program, did it make you more satisfied with your friends at school?	Most of key informants said that they had better relationship with their friends at school. They felt that their better-looking figures could draw more attention from others, resulting in making friends was easier. Once they had more friends, they had more activities to do together, such as playing sports. The most important thing was they had never been bullied after they had possessed the better figures, such as one of them said that <i>"I was so pleased with friends at school as I got more attention from friends at school, could make more friend, and never been bullied by anyone at school after my shape had been better."</i>
Overall life satisfaction	
1. After joining this program, did you have more satisfaction with your life in overall?	Most of key informants said that they were so satisfied with the program because of many reasons, such as meeting service-minded and funny staff, enjoying with exercise and physical activities, making a lot of new friends, and expressing themselves even more, such as one of them said that <i>"I was so happy with joining this program. I rated 9 out of 10. I could attend more fun physical activities with funny staff. I also could be more expressive about what I wanted here."</i> However, some of them said that they did not like joining this program as they did not like playing sports or doing exercises. They preferred staying at home to joining the program, such as one of them said that <i>"I did not like it because I really loved staying at home."</i>

DISCUSSION

The findings of this study are consistent with the previous research which was as follows;

1) First domain: Health

Most of the key informants said that their health was better due to regular exercise and eating nutritious food, resulting in better sleep as well. It is in line of Yadav. The results found that diet, sleep, and exercise are considered to be three integral components of a healthy life (16).

Most of the key informants said that they were very satisfied with their figures because they had a clearly taller figure. It is in line of León et al. Results show that children tended to underestimate their body size and many of them desired slimmer bodies, especially girls and older participants, although body-size perception improved with age (17).

Most of the key informants said that they have more energy or liveliness in doing various activities, including exercise. This program also helped reduce stress. It is in line of Schrader et al. This study showed that physical activity at the recommended level significantly has beneficial effects on psychological stress, and well-being (18).

2) Second domain: Finance

Most of the key informants said that the taller and better-shaped figure could bring them a brighter future and also could earn more income for them. It is in line of Persico. Research findings indicate that taller workers receive a wage premium, and the disparity in wages is similar in magnitude to the race and gender gaps (19). Moreover, it is also relevant to Zarić et al. The result found that body height seems to be an important factor in the performance of the basketball team at the FIBA-WC. Considering that all players at the FIBA-WC went through the rigorous selection process to be in their national teams, the body height of the higher-ranked players could be used as a reference value (20).

3) Third domain: Society

Most of the key informants said that they were pleased because joining this program truly had a positive effect on their confidence, resulting in a more enjoyable feeling when they participated in social events. It is in line of Tikac et al. Regular exercise habits provide social and psychological benefits as well as improve and ameliorate the physical health of individuals (21).

4) Forth domain: Self-confidence

Most of the key informants said that they had more self-confidence as their figures were better than before joining this program. It is in line with Ruiz-Turrero et al. Results showed that the level of compulsive exercise is linked to one's self-esteem, body image, and body satisfaction (22).

Most of the key informants said that joining this program could fulfill their lives as the height increased, personalities developed, and relationships with others improved. This also was the way to spend your spare time effectively. It is in line of Liao et al. The results showed that physical exercise has a significant positive impact on the development of personality traits (23).

Most key informants said that joining this program could make them feel more valuable as they had better shape, personality, and had more courage to speak confidently in front of many people. It is in line of Baumeister et al. The results showed that high self-esteem does lead to greater happiness (24).

5) Fifth domain: Leisure activities

Most of the key informants said that they could feel more enjoyable and pleasant with your leisure activities, such as playing sports, after joining this program as they were stronger and more energetic. It is in line of Wender et al. They conclude that when groups adopt a moderate-intensity exercise training program while participating in a randomized trial, this typically results in small-to-moderate average improvements in feelings of fatigue, energy, and vitality (25).

6) Sixth domain: Relationship in family

Most of the key informants said that they were satisfied with the relationship within their families because they got full support from their families for participating in this. Moreover, their relatives could notice their better-changed figures after joining this program. It is in line of de Camargo et al. The results indicate that social support from parents and friends increased the probability of adolescents reaching the amounts of physical activity investigated (26). Moreover, it is also relevant to Shauger. Research has shown that spending quality time together as a family can improve parent-child relationships and promote belonging, support communication, and even increase self-esteem and social skills. The meaningful daily interactions contributed to many positive outcomes including lower

loneliness, good relationships, and family life, in addition to physical and mental health (27).

7) Seventh domain: Relationship with friends

Most of the key informants said that they had better relationships with their friends at school. They felt that their better-looking figures could draw more attention from others, resulting in making friends easier. Once they had more friends, they had more activities to do together. It is in line with Swanson et al. The results showed that the Physical Activity (PA) of friends and the number of school friends that a child identified are positively associated with moderate-to-vigorous intensity PA (MVPA). The estimated associations between MVPA and aspects of children's friendships are similar for boys and girls (28).

8) Overall life satisfaction

Most of the key informants said that they were so satisfied with the program because of many reasons, such as meeting service-minded and funny staff, enjoying with exercise and physical activities, making a lot of new friends, and expressing themselves even more. It is in line with Pradeep et al. The results demonstrated that there is a relationship between service quality and customer satisfaction in health centers. High-quality services have become more attractive to customers (29).

CONCLUSION

The result from the Quality of life and the life satisfaction measurement clearly showed that all of the program participants were pleased with the program they have been trained in order to increase their height in every dimension, fostering their well-being overall. However, this study had two main limitations, the first one, was the in-depth interview process with the children participants which had to be assisted by their parents in every single question, and the second

one, was the small number of participants according to this intervention was so rare in Thailand, but the finding of this study offered the potentially useful information.

APPLICABLE REMARKS

- The proper physical activity program under expert monitoring can prove that after joining the program for some period of time, all participants were good in the quality of life and life satisfaction dimensions.
- Therefore, there will be a benefit for those who would like to increase the height, if there would be more tall institutions to use this intervention for increasing the height.
- Moreover, generalizing the contribution of this study can develop the quality of life and life satisfaction through effective physical activity programs, and also foster the well-being of participants overall.

AUTHORS' CONTRIBUTIONS

Study concept and design: Apithai Bumrunpanictarworn, Oam To-aj. Acquisition of data: Oam To-aj, Sornpravate Krajangkantamatr, Banalucka Tiramongkon. Analysis and interpretation of data: Oam To-aj, Sornpravate Krajangkantamatr. Drafting the manuscript: Apithai Bumrunpanictarworn, Oam To-aj, Sornpravate Krajangkantamatr, Navaporn Chanbanchong. Critical revision of the manuscript for important intellectual content: Banalucka Tiramongkon, Oam To-aj. Statistical analysis: Oam To-aj, Sornpravate Krajangkantamatr, Narathip Naewkumdee. Administrative, technical, and material support: Apithai Bumrunpanictarworn, Oam To-aj, Navaporn Chanbanchong. Study supervision: Oam To-aj, Apithai Bumrunpanictarworn.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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