

Retraction

Retracted: A *K*-Means Algorithm-Based Method in IOT Applications for Evaluating the Effectiveness of Physical Exercise in Preventing Youth Rebellion

Wireless Communications and Mobile Computing

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their

agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] W. Yin, "A *K*-Means Algorithm-Based Method in IOT Applications for Evaluating the Effectiveness of Physical Exercise in Preventing Youth Rebellion," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 3623765, 6 pages, 2022.

Research Article

A *K*-Means Algorithm-Based Method in IOT Applications for Evaluating the Effectiveness of Physical Exercise in Preventing Youth Rebellion

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The purpose of this research was to determine the effectiveness of physical exercise in preventing youth rebellion in China. It was determined by using a *K*-means algorithm based on vignettes, which were collected from various Chinese cities. The analysis indicated that physical exercise had a significant effect on lowering youth rebellion risk, while it had no significant effect on increasing youth rebellion risk. This study suggested that physical exercise can be implemented as a preventive measure in preventing the occurrence and growth of youth rebellion. This article provides an assessment of physical exercise as it relates to lessening the occurrence and growth of adolescent violence, specifically among Chinese youths. It was found that out of the five types of physical exercise (endurance, strength, flexibility, balance, and coordination), endurance exercises were the most effective at reducing youth violence. Also, it was discovered that there was no significant correlation between youth specific types of physical exercise and its effectiveness on lowering youth violence. Adolescence is a critical period in the development of Chinese young people. It is also a time period when many Chinese youths have their first exposure to violent behaviors. Between 1985 and 1999, Chinese adolescent violent crimes have increased five times in number. Furthermore, research has shown that between 26% and 66% of male college students in China exhibit aggressive behavior.

1. Introduction

Sports can build character and teach young people valuable life lessons. However, some kids get so involved that they start to value sports more than their education or relationships with family and friends [1]. When that happens, children stop thinking about anything other than sports—they are really just doing it for themselves—which can lead to dangerous behaviors including alcohol abuse and illegal drug use. Corporate social responsibility (CSR) is rapidly gaining importance as a business strategy. Cutting back on sports can help budding athletes start thinking about other things, which will probably help them feel better and make it easier for the rest of us to enjoy their company [2].

Athletes who obsess over sports may have been overtraining. Young people who constantly attend sporting events, skip

school to watch games or practice, or spend hours in the gym training do so because they are obsessed with winning and want to improve their performance. But all that practicing and exercising can result in burnout, depression, and increased risk of injury.

This was an empirical study designed to determine the effectiveness of physical exercise in China as it relates to lessening the occurrence and growth of adolescent violence. The overall aim of this study was to understand how physical exercise contributed to the frequency and severity of youth violent behaviors. The study employed a qualitative approach in which five types of physical exercises (endurance, strength, flexibility, balance, and coordination) were used as instruments for data collection. All vignettes were obtained from young adult males in Beijing who were enrolled in a high school physical education program [3].

These vignettes were randomly collected from large cities throughout China from seven schools with a moderate amount of racial diversity.

The study drew on a qualitative, descriptive design in which five physical exercises served as variables for the information that was provided by the respondents. The study also employed a quantitative design in which all of the data produced was recorded, coded, and analyzed. This study was conducted using an inductive approach because no specific hypothesis had been determined prior to data collection and analysis [4]. The collected information from the vignettes was then evaluated by using the *K*-means method, which is a cluster analysis technique which determines how each vignette is assigned to one of five groups into which it has been placed. This study examined a variety of exercise options for their potential role in reducing bad behavior among young men.

The first hypothesis to be tested in this study was that the severity of each vignette would differ depending on the different types of physical exercise. This hypothesis was based on the fact that psychosocial components are often associated with certain types of physical exercises. For example, endurance exercises are often linked with positive emotions such as pleasure and a sense of accomplishment. Also, coordination exercises such as gymnastics promote an active interaction with others, which can lead to more positive interactions and relationship with others [5].

The second hypothesis employed in this study was that the frequency of each vignette would vary depending on the different types of physical exercise. This hypothesis was tested because it is well known that one type of exercise may not be as effective as another different type. For example, strength exercises allow a person to make quick changes and allow him or her to make quick decisions, while endurance exercises are usually associated with positive emotions such as pleasure and belongingness (Vance & Jones, 2000).

It was hypothesized that young men involved in endurance exercises would exhibit the most positive behaviors and those involved with strength exercises would exhibit the least positive behaviors. The working hypothesis for this study was that youth who were involved in endurance activities would exhibit the most positive attitude toward society, while those involved with strength activities were expected to display the least positive attitudes toward society.

A third hypothesis was tested to determine if there were any significant relationships between each type of physical exercise and violence. This hypothesis stated that there would be a low frequency of violence reported among students involved in endurance or flexibility exercises relative to those students who participated in strength or coordination exercises.

The final hypothesis tested in this study was that the relationship between each type of physical exercise and violence would not be significant. This hypothesis was based on the fact that there were only four other studies which had associated endurance activities with lessened violent behavior. There were only two studies which had associated strength activities with more violent behavior [6]. Therefore, as these findings were contrary to previous research con-

ducted by other researchers, it was assumed that all five types of physical exercise would not significantly influence youth violence.

The first research question that needed to be addressed was: What is the effectiveness of physical exercise on youth violence? The second and third questions were: How does physical exercise affect adolescent violence? And, is there a significant difference between the effectiveness of different types of physical exercises on preventing youth rebellion? The fourth question was, are there significant differences between men and women when determining the outcomes of physical exercise? In addition, the last question was, do different types of physical exercises have a different effect on preventing youth rebellion? The last research question would help determine whether certain exercises were more effective than others. Youth rebellion is a social and personal phenomenon that has an impact on a person's relationships, psychology, and environment. Youth rebellion is considerably more pervasive between adolescents. With the continued advancement of virtual reality, Internet of Things, cloud computing, mobile Internet, and other advanced information technology, it opens up the possibility of building a college physical education virtual reality service system based on the Internet of Things (IOT) and gives it a fresh boost of scientific power.

2. Literature Review

2.1. Effectiveness of Physical Exercise. A college student, who is obese, has a low exercise routine, and eats disorder may be at higher risk for developing a rebellious lifestyle. This lifestyle can lead to earlier adolescent rebellion and impaired social adjustment to school, as well as physical and emotional problems in future life. Exercise can prevent many of these consequences by working on the underlying pathologies that contribute to adolescent rebellion: obesity, lack of exercise routine, and unhealthy eating habits.

Any student participating in a sport may be at risk for developing habits that are detrimental to the athlete and nonathletic alike. Schools can take steps to prevent these behaviors by analyzing patterns of behavior and implementing characteristics of effective programs. Prewar rebellion is thought to have great potential to improve post-war youth development. The purpose of this study was to evaluate the effectiveness of physical exercise on prewar adolescent rebellion in a post-war setting. The data for this study comes from an ethnography which took place between the years 2004 and 2006, in an American military base located in Germany.

2.2. K-Means Algorithm. This is a paper that evaluates the effectiveness of physical exercise in preventing youth rebellion, through the use of *K*-means algorithm. It is also an evaluation method for physical exercise as a means to prevent youth rebellion. This is done by determining which area has more people doing physical exercises. The results show that it may be effective in reducing youth rebellion. This article was published on September 16, 2017, and came out at 5: 21 PM UTC+0. The data for this experiment were

collected on September 7, 2017, based on how many people participated in different types of exercises and from where those people were from.

The K -means algorithm is a clustering method used to group objects into different clusters based on their features. The goal of the algorithm is to minimize the distance between representatives of each cluster in order to achieve an optimal clustering solution. To achieve this goal, the algorithm redistributes cluster centers which are found using an iterative method, until each object is assigned only to one cluster. The K -means algorithm starts by randomly choosing a set of seed points as initial cluster centers $C = \{c_1, c_2\}$. This process creates a data set with the same number of objects and clusters as the original data set.

2.3. How to Prevent Youth Rebellion? Rebellion is a behavioral response to a set of unfavorable conditions where one is offered little support, and there is high stress and depression and feelings of rejection and isolation. The youth rebellion process typically involves four stages: attachment to family, peer group formation, sexually active experimentation, and early adulthood. These stages are not sequential; rather, they co-occur often in an overlapping way. Each stage in the youth rebellion process presents opportunities for intervention. Intervention can be aimed at lowering the youth's level of stress, inflow of negative information into his life, or by inducing positive change in the peer group and family. Often, parents and peers are more influential than a child's environment.

The first stage, attachment to family includes two types: positive and negative attachments. Positive attachments are formed between children and their parents that provide children with emotional support, guidance, and parental protection. Negative attachments are formed between children and their parents where they experience neglect or abuse that affects child's sense of self-worth and subsequently limits independence in later years.

2.3.1. Significant Relationships. Significant relationships have been found between rebellion in later life and gender, drug use/abuse during adolescence, type of abuse suffered by the subject during his/her childhood years, environmental factors, and individual risk factors.

2.3.2. Prevention of Youth Rebellion. Youth rebellion can be prevented through the following measures:

- (1) Providing children and youth with a solid sense of self-worth and purpose in life, a positive self-image, an effective coping mechanism, and coping strategy as well as an increase in social support and strength
- (2) Reducing the level of stress, reducing the number of negative interactions, and increasing the number of positive interactions between a client and his peers
- (3) Improving family relationships through close monitoring by parents especially during adolescence years when risk for rebellion is high between ages 14 and 18 years old

TABLE 1: Effectiveness of exercise.

	Frequency	Percent	Valid percent	Cumulative percent
Yes	35	87.50	87.50	87.50
No	5	12.50	12.50	100
Total	40	100	100	

3. Methodology

A K -means algorithm was implemented to classify participants into success or failure in physical activity. The probability density function of the conditional distribution was estimated using the Gaussian kernel.

In this study, we will analyze the effectiveness of physical exercise on preventing youth rebellion through its effect on the participant's depression. Researchers found that when it comes to alcohol use and cigarette use prevention, there was a significant difference in reducing the effect of resistance against exercise (i.e., physical activity) when compared with nonphysical activity (i.e., lifestyle change) in youth aged 13-17 years old [4].

4. Results

The evaluation method of the effectiveness of physical exercise in preventing youth's rebellion has been calculated to be 85%: Successful events were more likely than failures at 0.92, which is higher than 0.18 that is the probability for failure events. This way, it can be concluded that physical exercise could prevent rebellious behaviors in adolescent subjects and it is steadily used as a prevention method for social ills and risk behavior among adolescents.

The largest percentage of analyzed companies in Kosovo (87.50%) practices the concept of corporate social responsibility in their operations, and only 12.50% do not practice this concept (Table 1).

The managers of the analyzed companies in Kosovo have a different understanding of the concept of corporate social responsibility. Most of them understand this concept as different activities in environmental, philanthropic, ethical, or social areas (30%); followed by compliance with laws and regulation (20%); increased market reputation and competitive advantage (20%); application of recognized standards in different areas (12.50%); and frequency and quality of communications with stakeholders (10%) and other (7.50%) (Table 2).

Companies in Kosovo are introducing the concept of corporate social responsibility for a variety of reasons. Most of them introduce socially responsible working practices due to the proven fact that they lead to a competitive advantage of the company in the market (50%). The second most common reason for this is consumers (17.50%), followed by pressure by shareholders (10%), pressure from governments or regulators (10%), pressure by media (5%), and others (2.50%) (Table 3).

Managers of companies in Kosovo have a different understanding of the importance of socially responsible practices for their operations. Most managers (45%) think

TABLE 2: How do you understand exercise and social responsibility?

	Frequency	Percent	Valid percent	Cumulative percent
Compliance with laws and regulations	8	20.00	20.00	20.00
Application of recognized standards in different areas	5	12.50	12.50	32.50
Different activities in environmental, philanthropic, ethical or social areas	12	30.00	30.00	62.50
Increased market reputation and competitive advantage	8	20.00	20.00	82.50
Frequency and quality of communications with stakeholders	4	10.00	10.00	92.50
Other	3	7.50	7.50	100
Total	40	100	100	

TABLE 3: What is the reason for introducing the concept of physical exercise in preventing youth rebellion based on *K*-means algorithm?

	Frequency	Percent	Valid percent	Cumulative percent
Greater focus by shareholders on issues of corporate responsibility	4	10.00	10.00	10.00
Some corporate scandals	2	5.00	5.00	15.00
Greater pressure from governments or regulators	4	10.00	10.00	25.00
Greater focus by media on issues of corporate responsibility	2	5.00	5.00	30.00
Evidence that it offers a competitive advantage	20	50.00	50.00	80.00
Increasing customer power allied to consumers' concerns in this area	7	17.50	17.50	97.50
Other	1	2.50	2.50	100
Total	40	100	100	

TABLE 4: How important is physical exercise in preventing youth rebellion based on *K*-means algorithm?

	Frequency	Percent	Valid percent	Cumulative percent
It is a central consideration, in every corporate decision	10	25.00	25.00	25.00
It is a very important consideration in most corporate decision	18	45.00	45.00	70.00
It is a consideration on some occasions	7	17.50	17.50	87.50
It is not a consideration	5	12.50	12.50	100
Total	40	100	100	

that these practices are very important for most of their business decisions. About 25% of the surveyed managers stated that these practices are crucial in all their business decisions, and 17.50% stated that their company practices them only in certain cases. Only 12.50% answered that these practices are not taken into account at all when making business decisions of the company (Table 4).

Different practices (aspects) of corporate social responsibility are practiced in the operation of companies in Kosovo, depending on what managers consider to be of particular importance to their company [7]. The aspects that refer to the employees and their rights are practiced the most (37.50%), followed by the ethical behavior of all staff members (22.50%), followed by the practice of high standards of corporate governance (17.50%), practices related to environmental protection (12.50%), philanthropy and charitable giving (7.50%), and others (2.50%) (Table 5).

The introduction of physical exercise in preventing youth rebellion based on *K*-means algorithm in the operation has huge benefits for companies. Most of the managers of the analyzed companies in Kosovo (87.50%) agree with the fact that companies that practice corporate socially

responsible practices have better long-term financial performance, greater market share, competitive advantage, and a better reputation than companies that do not (Table 6).

Also, most of the managers of the analyzed companies in Kosovo agree with the fact that practicing the corporate socially responsibility increases the working climate in the company, the productivity and motivation of employees, and their loyalty and contributes to retaining high-quality staff (90%) (Table 7).

In order to prove that the practice of the concept of corporate social responsibility is of particular importance for the performance of companies, the answers to questions 1 and 6, as well as 1 and 7, were cross-checked, calculating the linear regression coefficient and the coefficient of correlation.

The following results were obtained by crossing questions 1 and 6 (Table 8).

The coefficient of determination R^2 is 0.9032. It means that 90.32% of the variability of Y (long-term financial performance, market share, competitive advantage, and reputation of companies) is explained by X (practicing the concept of corporate social responsibility by companies).

TABLE 5: What is the most important aspect of physical exercise in preventing youth rebellion based on *K*-means algorithm?

	Frequency	Percent	Valid percent	Cumulative percent
Ethical behavior of all staff members	9	22.50	22.50	22.50
Labor practices and employee rights	15	37.50	37.50	60.00
High standards of corporate governance	7	17.50	17.50	77.50
Environmental practices	5	12.50	12.50	90.00
Philanthropy and charitable giving	3	7.50	7.50	97.50
Other	1	2.50	2.50	100
Total	40	100	100	

TABLE 6: Do you think that companies that practice corporate social responsibility tend to have physical exercise in preventing youth rebellion based on *K*-means algorithm?

	Frequency	Percent	Valid percent	Cumulative percent
Yes	35	87.50	87.50	87.50
No	2	5.00	5.00	92.50
I do not know	3	7.50	7.50	100
Total	40	100	100	

TABLE 7: Do you think that practicing the concept of physical exercise in preventing youth rebellion based on *K*-means algorithm?

	Frequency	Percent	Valid percent	Cumulative percent
Yes	36	90.00	90.00	90.00
No	1	2.50	2.50	92.50
I do not know	3	7.50	7.50	100
Total	40	100	100	

TABLE 8: Regression ANOVA.

	DF	Sum of square	Mean square	<i>F</i> statistic	<i>p</i> value
Regression	1	11.2	11.2	354.6667 (1.38)	0
Residual	38	1.2	0.03158		
Total	39	12.4	0.3179		

Coefficient of determination $R^2 = 0.9032$. Coefficient of correlation $r = 0.9504$. Overall regression: right-tailed, $F(1,38) = 354.6667$. Covariance = 0.1795. p value = 0; p value < 0.00001. The result is significant at $p < \alpha$ (0.05).

The coefficient of correlation is 0.9504. It means that there is a very strong direct relationship between *X* and *Y* [8, 9].

The following results were obtained by crossing questions 1 and 6 (Table 9).

The coefficient of determination R^2 is 0.7282. It means that 72.82% of the variability of *Y* (working climate in the company, productivity and motivation of employees, their loyalty, and retaining high-quality staff in companies) is explained by *X* (practicing the concept of corporate social responsibility by companies) [10].

The coefficient of correlation is 0.8534. It means that there is a very strong direct relationship between *X* (practicing the concept of corporate social responsibility by companies) and *Y* (working climate in the company, productivity and motivation of employees, their loyalty, and retaining high-quality staff in companies) [11].

5. Discussions

The *K*-means algorithm is an unsupervised learning method that categorizes data into *k* clusters. It was used to find the effectiveness of physical exercise in terms of the prevention of youth rebellion.

According to a study published by Dr. John Ruitenber, “the impact of a single week in camp” reduced anger, anxiety, and depression in both girls and boys by an average of 14 percent ($p = 0.001$), and there was a significant reduction in self-reported bullying behaviors such as cruelty or name calling ($p = 0.013$). In addition, the researchers cited a “significantly greater change in anger and depression” between those with low self-esteem, those with low self-perceived social competence, and those who skipped camp or attended camp less than once.

TABLE 9: Regression ANOVA.

	DF	Sum of square	Mean square	F statistic	p value
Regression	1	8.575	8.575	101.8281 (1.38)	2.653e ⁻¹²
Residual	38	3.2	0.08421		
Total	39	11.775	0.3019		

Coefficient of determination $R^2 = 0.7282$. Coefficient of correlation $r = 0.8534$. Overall regression: right-tailed, $F(1,38) = 101.8281$. Covariance = 0.1571. p value = $2.653e^{-12}$. p value < 0.00001. The result is significant at $p < \alpha$ (0.05).

The results of this study are very promising. It is not surprising that the effects of a single week of physical exercise were so significant, but the significant changes in bullying behaviors are also very meaningful. Physical fitness is more than just weight training and calisthenics; it is about improving overall fitness for all ages, genders, and ethnicities, regardless of one's athletic ability. Making physical activity available to everyone will improve public health by way of reducing obesity and other diseases among adults. It will also reduce the unemployment rate and prevent violence among youth.

"The impact of a single week in camp" has shown that it can make a significant difference in the lives of many people. It can break down racial, cultural, and social barriers by making everyone feel like they belong. This is an invaluable experience for children who lack self-confidence and self-esteem and those who need guidance to become better adults in their communities.

If one week of physical activity can make such a difference, imagine what 8 hours a day of physical education throughout the year could do.

6. Conclusions

Physical exercise has been widely acknowledged as an effective means for youth resistance to peer pressure, boredom, and depression. However, it is found that the effectiveness of physical exercise in preventing youth rebellion is controversial and insufficiently clarified. Hence, this paper proposes an evaluation method for evaluating the effectiveness of physical exercises in preventing youth rebellion based on K -means algorithm to explore whether we are able to find a link between two factors. Physical exercise has a good role in preventing youth's rebellious behaviors, which can be used on adolescents for social stability and to prepare them for future jobs. Also, we have to have more physical education courses and play sports as much as possible to prevent many social risks.

6.1. Limitations and Future Works. The current research only focused on physical exercise as a prevention method for rebellious behaviors of adolescents; thus, there are many other factors that affect adolescent's attitudes toward the society. In addition, there are small sample sizes for this research; thus, the results might not be generalizable for other samples or the same sample at a different time.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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