

THE ROLE AND IMPORTANCE OF PHYSICAL EXERCISE ON THE AGGRESSION LEVEL OF HIGH SCHOOL STUDENTS

D. POPESCU¹ A. M. COSMA² R. STEPAN³ G.A. COSMA⁴

Abstract: *Introduction.* The phenomenon of bullying is increasingly widespread among students and at the national level all kinds of techniques and activities are being tried to combat it. **Methods.** In the present study, we aimed to measure the level of aggression among secondary school students, who participated in a Physical Education and Sports Program, held over a period of 6 months, with a frequency of 8 times/month. A number of 36 students, at the secondary school level, aged between 11- 15 years, from the rural environment, from the South-West Region of Oltenia, all enrolled in the same school, took part in this experiment. As a tool, the Aggression Questionnaire (AQ) was applied, with 4 scales: Physical Aggression, Verbal Aggression, Anger, Hostility. Aggression was measured both before and after participation in the sports training program. **Results.** The results indicated a lower level of aggression at the end of the program, compared to the level present in the students, before following the sports trainings. **Conclusions.** Thus, physical and sports education can be an optimal means of controlling aggression and a catalyst for it in positive aspects and behaviors.

Key words: physical exercise, students, aggression.

1. Introduction

The phenomenon of bullying is ubiquitous among students and young people, everywhere.

They are increasingly aware of the presence and implications of this phenomenon and, although the conclusions of all studies emphasize gender differences, the phenomenon affects both victims and aggressors, and

¹ Doctoral School of Social Sciences and Humanities, University of Craiova

² Faculty of Physical Education and Sport, University of Craiova

³ INCESA, University of Craiova

⁴ Faculty of Physical Education and Sport, University of Craiova

the school must make active and sustained efforts to diminish as much as possible possibly the effects of these maladaptive behaviors.

Bullying is defined as the use of force and aggression repeated over time that is intended to cause stress or control another.

A questionnaire about bullying that was completed by 2295 teenagers concluded that bullies define bullying by power imbalance and victims define it by the intent to hurt [5].

A nationally representative sample of 5472 elementary school students responded to their fear of coming to school because of violence, fear that was associated with school climate, challenging peer and teacher behaviors, and personal victimization [1].

Another study, carried out on students from class VII to class X ($n=170$), regarding their perception of bullying, it showed that they consider verbal aggression as the first indicator of bullying, and theft was in last place [2].

A sample of 387 students between the ages of 7 and 14 in Portugal responded to a study that aimed to identify gender differences in bullying. The results showed that both girls and boys are victims and aggressors, but gender differences greatly affect the assumed roles, namely the fact that boys are much more physically aggressive than girls [10].

Another study tried to find in teenagers the answer related to what they understand by bullying. Thus, 166 9th grade students from Sweden participated in the research and identified 5 major categories of bullying and 26 subcategories, among which: personal reasons, attributed to the victim and the aggressor, and the girls showed more

likely to blame the aggressor, than the boys [15].

Another study concluded that students are more likely to turn to their parents and teachers in a bullying situation than to their peers or the class [8].

Mobbing, defined as bullying aimed at the same people and for long periods of time, was studied on a group of 434 students from Finland. The results showed that there was a disproportionate power ratio between victims and aggressors, the former being physically weaker, with a higher frequency of the presence of disabilities or obesity, while the aggressors showed negative attitudes towards teachers and peers and positive against aggression [11].

Reactive and proactive aggression was studied on a sample of 1062 children, aged between 10 and 12 years. The results indicated that victims have significantly higher scores on reactive aggression compared to bullies who have a high level of proactive aggression [14].

Bullies had a higher risk of conduct problems and hyperactivity and are the most likely to have academic difficulties. Bullies have relatively better school grades and high self-esteem, but have a higher risk of hyperactivity and conduct problems compared to victims, a study in India has found [12].

2. Research Methods

2.1. Participants and procedure

A total of 36 children between 11 and 15 years old participated in the study ($M = 12.95$, $SD = 1.25$), of which 21 were boys (55%) and 17 were girls (45%). The group consisted of secondary school enrolled in a rural school. They participated in a Physical Education and

Sports Program held over a period of 6 months, with a frequency of 8 times/month. A number of 36 students, at the gymnasium level, aged between 11-15 years, participated in this experiment.

Aggressiveness was tested twice - initially, before the start of the Physical Education and Sports Program, namely at the beginning of the school year, in September and at the end of it, in February.

2.2. Instruments

Aggression was measured with Aggression Questionnaire [3]. The questionnaire includes 29 items and evaluates four dimensions of aggression, namely physical aggression, verbal aggression, anger and hostility. The scores are given on a five-step Likert scale, where 1 - extremely uncharacteristic of me and 5 - extremely characteristic of me. High scores indicate increased levels of aggression.

2.3. Purpose and Hypothesis

The aim of the present study was to analyze the differences in children's level of aggression and reaction time before

and after their participation in a Physical Education and Sports Program. Thus, the research hypotheses are as follows:

H1. *Following the children's participation in the Physical Education and Sports Program, the level of aggression decreased.*

H1a. *Following the children's participation in Physical Education and Sports Program, the level of physical aggression decreased.*

H1b. *Following the children's participation in the Physical Education and Sports Program, the level of verbal aggression decreased.*

H1c. *Following the children's participation in Physical Education and Sports Program, the level of anger decreased.*

H1d. *Following the children's participation in the Physical Education and Sports Program, the level of hostility decreased.*

3. Results

Descriptive statistics

Means, standard deviations, Cronbach Alpha coefficients and Spearman correlations among variables are presented in Table 1 (pretest) and Table 2 (posttest).

Table 1
Means, standard deviations, Cronbach Alpha coefficients and Spearman correlations among variables

| | M | SD | α | PHAG Pre | VEAG Pre | ANG Pre | HOS Pre |
|---------|------|------|-----|-------------|-------------|------------|------------|
| PHAGPre | 2.20 | 1.14 | .94 | 1 | | | |
| VEAGPre | 2.21 | .99 | .86 | .71** | 1 | | |
| ANGPre | 2.12 | 1.19 | .94 | .83** | .84** | 1 | |
| HOSPre | 2.17 | .70 | .71 | .36* | .64** | .54** | 1 |

** . p < .01, * . p < .05. PHAGPre - Physical aggression pretest, VEAGPre – Verbal aggression pretest, ANGPre – Anger pretest, HOSPre – Hostility pretest

Table 2

Means, standard deviations, Cronbach Alpha coefficients and Spearman correlations among variables

| | M | SD | α | PHAG Post | VEAG Post | ANG Post | HOS Post |
|-----------|------|-----|----------|-----------|-----------|----------|----------|
| PHAG Post | 1.30 | .46 | .87 | 1 | | | |
| VEAG Post | 1.40 | .61 | .83 | .55** | 1 | | |
| ANG Post | 1.41 | .60 | .87 | .62** | .65** | 1 | |
| HOS Post | 1.35 | .36 | .70 | .31 | .49** | .53** | 1 |

** . $p < .01$, * . $p < .05$.

PHAGPost - Physical aggression posttest, VEAGPost – Verbal aggression posttest, ANGPost – Anger posttest, HOSPost – Hostility posttest

Hypotheses testing

H1. *Following the children's participation in the Physical Education and Sports*

Program, the level of aggression decreased.

To test this hypothesis, the non-parametric Wilcoxon paired-samples test was performed.

Table 3

Ranks for aggression dimensions before and after children's participation in the Physical Education and Sports Program

| | | N | Mean Rank | Sum of Ranks |
|--------------------|----------------|-----------------|-----------|--------------|
| PHAGpost - PHAGpre | Negative Ranks | 33 ^a | 17.00 | 561.00 |
| | Positive Ranks | 0 ^b | .00 | .00 |
| | Ties | 3 ^c | | |
| | Total | 36 | | |
| VEAGpost - VEAGpre | Negative Ranks | 33 ^a | 17.00 | 561.00 |
| | Positive Ranks | 0 ^b | .00 | .00 |
| | Ties | 3 ^c | | |
| | Total | 36 | | |
| ANGpost - ANGpre | Negative Ranks | 31 ^a | 16.00 | 496.00 |
| | Positive Ranks | 0 ^b | .00 | .00 |
| | Ties | 5 ^c | | |
| | Total | 36 | | |
| HOSpost - HOSpre | Negative Ranks | 35 ^a | 18.00 | 630.00 |
| | Positive Ranks | 0 ^b | .00 | .00 |
| | Ties | 1 ^c | | |
| | Total | 36 | | |

a. post < pre, b. post > pre, c. post = pre.

PHAGPost - Physical aggression posttest, VEAGPost – Verbal aggression posttest, ANGPost – Anger posttest, HOSPost – Hostility posttest

It is observed that out of a total of 36 children, 33 scored lower on physical aggression after participating in the

program, and three children scored equal, $M_{Rg} = 17.00$, 33 children scored lower on verbal aggression, and three children

scored equal, $M_{Rg} = 17.00$, 31 children scored lower on anger, and five scored equal, $M_{Rg} = 16.00$, 35 children scored lower on hostility, and one child scored equal, $M_{Rg} = 18.00$.

Wilcoxon test for paired samples

Table 4

| | PHAGpost - PHAGpre | VEAGpost - VEAGpre | ANGpost - ANGpre | HOSpost - HOSpre |
|---|--------------------|--------------------|------------------|------------------|
| Z | -5.02 | -5.02 | -4.80 | -5.14 |
| p | .00 | .00 | .00 | .00 |

PHAGPost - Physical aggression posttest, VEAGPost – Verbal aggression posttest, ANGPost – Anger posttest, HOSPost – Hostility posttest

The differences are statistically significant for all four dimensions of aggression, respectively for physical aggression, $Z = -5.05$, $p < .01$, for verbal aggression, $Z = -5.02$, $p < .01$, for anger, $Z = -4.80$, $p < .01$, and for hostility, $Z = -5.14$, $p < .01$.

Taking into account these results, we can state that hypothesis H1 is supported by the analyzed data.

4. Conclusions and Discussions

Bullying in the school space can be explained by different social roles, among which the climate created in the school stands out. A child's education in the family is largely focused on competitiveness and victory at all costs, but is not directed towards the acquisition of gradual skills, according to age and achieved through cooperation and solidarity.

Studies show that bullying is still predominantly by male, manifesting itself through physical aggression and insults. Strategies that include gender differences should be implemented as a priority to prevent bullying in the school context.

The conclusions of all the studies drew attention to gender differences, in the sense that boys accept physical aggression

more easily than girls and are much more often in positions of aggressors than victims [7].

School-based programs have shown promise in reducing aggressive behavior, but the effectiveness of physical activity modalities among adolescents may differ. Results similar to those obtained by us were also identified in a study that aimed to determine the effects of a football program in school on physical fitness and aggression in adolescent students. Aerobic fitness, vertical jump, medicine ball throw, and the Buss and Perry Aggression Questionnaire were assessed before and after eight months of training [3]. Improvements were seen on both the physical aggression and physical ability subscales [16]. In another study, from 2009, bullying was negatively associated with participation in daily physical and sports activities and positively with the use of video/computer games [6]. Another study reported the results obtained by 423 students, comparing those involved in sports activities and those who were not involved in such activities. The results showed that young people involved in sports activities are not more aggressive towards others, have higher self-esteem, are more socially competent and are less shy and less likely to experiment with

drugs [13]. An after school volleyball program was offered to a group of 107 students between the ages of 14 and 16. The program lasted 8 months and did not overlap with the physical education classes held in the school curriculum. The researchers also measured aggression with the Buss and Perry Aggression Questionnaire [3] both in the students participating in the program, compared to the students who only participated in physical education classes, and the results showed, like those in our study, a significant decrease in aggression on all 4 scales for the participants in the volleyball program [17].

Another research conducted on 371 students at a sports college in Turkey studied the level of aggression and compared it with students who do not practice sports activities. Their results indicated significant differences for students on the sub-dimension of destructive aggression, and at the same time a much higher level of self-esteem among those who actively practice sports [4].

Another research, this time conducted on representative samples of students for two countries, US (N = 14.818) and Canada (N = 7266) examined how students' physical activity and social media use are associated with indicators of physical and social health. Their results indicated that positive health indicators, including health status, self-image, quality of life and quality of relationships with family and peers, are positively associated with students' physical activity, and social media use was negatively correlated with most positive health indicators [9].

The results of our study contribute significantly to the understanding of possible mechanisms for reducing aggression among students, which include

motivation and self-control through sports activity. These findings suggest potential positive consequences of increasing the frequency of physical education programs in addition to physical education in schoolchildren and adolescents and provide further justification for such efforts.

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