

**PHYSICAL EXERCISE AS A METHODOLOGICAL TOOL IN THE TEACHING OF PHYSICAL  
EDUCATION AND THE INFLUENCE ON "SCHOOL CLIMATE"  
– A SYSTEMATIC REVIEW RESEARCH –**

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**Abstract**

School is a place where children spend many hours during the day. Therefore, it is very important to develop a positive perception of the "school climate" among both teachers and students. It is believed that many factors can have an impact on the productivity of students' work, however, the impact of organized physical exercise is least mentioned in previous research. It is also believed that daily physical activity has a positive impact on growth and development, but also on student motivation. Therefore, the goal of this review was to determine the connection between physical exercise and students' perception of the concept of "school climate". A systematic review was performed to identify randomized studies based on defined keywords ("School climate" and "Physical education") and a search of three databases: "PubMed", "Mlibrary" and "Scindeks". Out of a total of 126 scientific studies, based on the selection criteria, a total of 5 papers were identified and included in the analysis of this review paper. During the review of the available literature, it was concluded that very few authors analyzed the impact of physical exercise on students' perception of the "school climate". Also, the authors of the identified studies indicate the importance of informing students about the positive impact of daily physical activity, as well as the importance of organized time during school breaks.

**Key words:** STUDENTS / TEACHERS / SCHOOL BREAK / MOTIVATION / PERCEPTION

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## INTRODUCTION

Within the educational system, the term "school climate" is being mentioned more and more often, which is used when describing the general impression of a school organization. At early nineties of the last century, the importance of the influence of the "school climate" on student behavior, as well as the influence on cognitive performance, was stated (Hung, Luebbe, & Flaspohler, 2015). In the beginning, the first researches were based on the analysis of the professional staff of the school (behavior, morale, productivity at work) which contributed to the realization of the importance of the working environment (Đermanov, 2007). Much later, an instrument in the form of a questionnaire (Organizational Climate Description Questionnaire - OCDQ) was developed, which was designed to systematically study the impact of "school climate" on student learning and development (Cohen, McCabe, Michelli, & Pickeral, 2009). At the end of the seventies, authors began to investigate the connection between school climate, motivation, commitment to school and school duties, because it was observed that there is a connection with positive attitudes, better discipline, school success and greater satisfaction, both for teachers and students (Lunenburg, 1983). Also, positive "school climate" was observed to be associated with a sense of trust between teachers, but also between teachers and school principals (Tarter, & Hoy, 1988). Only at the end of the 1980s, the connections between "school climate" and various forms of student behavior problems began to be investigated (Gottfredson, Gottfredson, Payne, & Gottfredson, 2005). As for the term that describes "school climate", there are certain disagreements among certain authors regarding the definition of the problem itself, so terms such as: pedagogical climate, school environment, school circumstances and others are found (Đurišić, 2020). Certainly, the mentioned term refers to measurable factors that have an impact on the quality of the school organization and the behavior of the school population (Anderson, 1982; Litwin, & Stringer, 1968). Although it does not represent an identical description as "school climate", the literature often mentions "school culture", which refers to a set of norms, attitudes, beliefs, values and other measurable factors, which describe the general picture of a school (Barth, 2002). Very important can be considered the students' perception of the school environment itself, as well as the observed differences between individual schools (Hoy, Tarter, & Kottkamp, 1991). One of the many definitions of the term "school climate" emphasizes the importance of the set of all circumstances in which the educational process takes place, i.e. interactive relationships between participants (Joksimović, & Bogunović, 2003), as well as defining the quality of the school environment (Baranović, Domović, & Štibrić 2006). As a term, "school climate" can be viewed through psychosocial and pedagogical aspects. The set of all physical, psychological and social circumstances would refer to the psychosocial aspect (a set of rules, norms and relationships between teachers and students), while the quality of the curriculum and factors related to staff expertise would refer to the pedagogical aspect of the "school climate" (Joksimović, 2004; Ševkušić, 2016; Cohen, at al., 2009). Therefore, based on the above facts about the phenomenon of "school climate", the aim of this review was to determine how some authors show the connection between student behavior and school physical activity as a preventive tool in teaching. Physical education was rated by elementary school students as a favorite subject, equally by boys and girls, with a slightly higher preference for students in younger grades (Lepir, Pajkić, Sekulić, 2021).

## METHODS

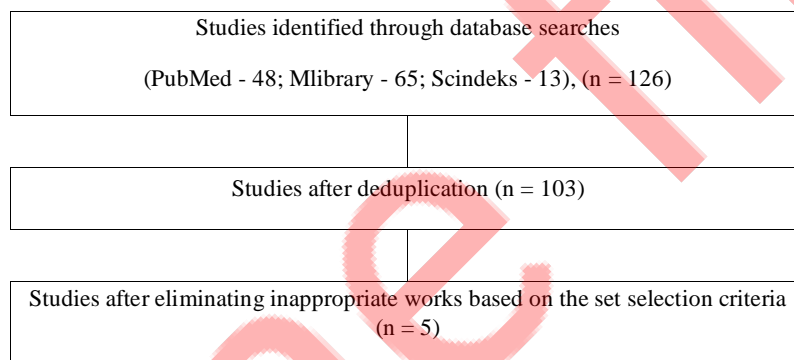
A systematic review identified scientific studies that described the connection between the influence of physical education classes and preventive physical exercise on the status of "school climate".

### Search and selection method

The first phase of the research included the definition of search keywords. The search for scientific literature was carried out through a review of the bibliographic database and the Serbian citation database ("PubMed", "Mlibrary" and "Scindeks") by typing the following key words: "School climate" and "Physical

education". In the "PubMed" search engine, a filter is included that specifies the search for only highly qualified scientific studies (Randomized Clinical Studies - RCT). Also, in all three mentioned search engines, filters are included that specify the search for works in English and without time limits. After searching bibliographic databases by typing keywords, a total of 126 scientific studies were obtained. For the easier elimination of duplicated studies, all papers have been combined in one place to exclude duplicates. After eliminating 23 duplicate titles, the titles and abstracts of 103 scientific studies were reviewed. All scientific studies that showed: inappropriate design, failure to mention the problem of "school climate" and physical exercise, physical exercise with sick children and adults, research on the LGBT population and titles related to research with animals were rejected. The final selection of scientific studies, which was included in the analysis of this systematic review, concerned the selection based on the application of physical exercise within the school program in order to have a positive impact on the general perception of "school climate". The process of identification and selection of scientific studies is shown in Table 1. After a more detailed analysis of selected studies (N=10), it was determined that a total of 5 papers meet the set criteria related to: design, subjects and application of physical exercise as a way to influence perception "school climate".

**Table 1.** Presentation of the process of collecting individual studies



### Selection criteria

The criterion for the selection of scientific studies for this review was primarily related to: design, subjects and variables ("school climate" and "physical education"). The application of certain instruments, as well as the method of work, was not decisive for the selection of studies. The design referred to randomized studies that reported the impact of physical exercise or physical activity on the perception of "school climate". Therefore, all studies that did not meet the set criteria were discarded. For the review, only studies were selected that mentioned respondents who make up the school environment: physical education teachers, teachers and instructors, and above all students. The key criterion for the selection of studies was related to the application of physical activity during the school day, that is, physical exercise (physical education classes) as a method that can influence the positive perception of the "school climate".

### Analysis of identified studies with discussion

Based on the set selection criteria, a total of 5 scientific studies were identified that were published between 2002 and 2020 (Table 2). Two studies reporting an effect of physical exercise were excluded because they were a pilot (Haapala, Hirvensalo, Laine, Laakso, Hakonen, Kankaanpää, Lintunen, & Tammelin, 2014) and a cluster randomized study (Teesson, Newton, Slade, Chapman, Allsop, Hides, McBride, Mewton, Tonks, Birrell, Brownhill, & Andrews, 2014). Only two identified studies reported a pretest and posttest (Birnbaum, Evenson, Motl, Dishman, Voorhees, Sallis, Elder, & Dowda, 2005; Efstathiou, Risvas, Theodoraki, Galanaki, & Zampelas, 2016), while two studies investigated the impact of physical exercise exclusively with female students (Birnbaum et al., 2005; Barr-Anderson, Neumark-Sztainer, Lytle, Schmitz, Ward, Conway, Pratt, Baggett,

Lytle, & Pate, 2008). This review included a total of 3279 respondents from 81 schools from the following areas: United States of America, Kingdom of Spain, Australia, Greece and Finland. Organized physical exercise or information about filling in an anonymous questionnaire about the importance of physical exercise and perception of the "school climate" was mostly conducted by teachers. Also, new programs such as "Playworks" (London, Westrich, Stokes-Guinan, & McLaughlin, 2015) were initially led by an instructor, and later by students as program collaborators (coaches). In the majority of the selected studies, the respondents were elementary school students aged 8-14. One study also mentions older students up to 20 years old (Manzano-Sánchez, 2022).

**Table 2.** Presentation of the studies included in the qualitative analysis

SN	First author, year of publication	Country	The aim of the research	Total number of respondents	Number of schools	Results
1	Birnbaum, 2005	USA	Testing the school climate perception of female students regarding participation in physical activities	476	6	The school climate for girls' physical activity is measurable. The physical education teacher plays a more important role than the boys.
2	Barr-Anderson, 2008	USA	Testing the school climate perception of female students regarding participation in physical activities	1511	36	The school climate for girls' physical activity is measurable. The physical education teacher plays a more important role than the boys. Body mass index was inversely associated with physical activity. In 4 schools, better functioning was recorded through organized physical exercise during the breaks, which concerns: promoting inclusion, leadership, positive relationships between students and a sense of emotional security needed to resolve conflicts.
3	London, 2015	USA	The impact of organized breaks on the school climate.	93	6	Promoting responsibility in physical education classes by teachers may be an important aspect to consider, as well as values related to effort or respect for others.
4	Manzano-Sánchez, 2022	Kingdom of Spain	Analysis of different student profiles in relation to self-determination theory, school climate and violence on physical education classes.	470	3	The school education program on physical activity has an impact on reducing daily screen time and increasing outdoor activities.
5	Efstathiou, 2016	Greece	The influence of education about nutrition and the importance of physical activity on the perception of physically active and sedentary students.	729	30	

In the mentioned research, variables were measured that concerned: responsibility, autonomy, competence and social relationship, level of motivation, school social climate and violence among students. Also, some authors emphasize the importance of researching the perception of female students about the "school climate" in physical education classes, as well as the importance of the influence of organized time during the school holidays on a positive "school climate". In addition to physical exercise, as an important factor that has an impact on a positive "school climate", certain studies have given importance to the research of acquired eating habits (Efstathiou, at al., 2016). One cluster randomized study (Teesson, at al., 2014) reported the effect of a regular school physical exercise and health education program, but within a control group. Thus, the authors state the importance of multi-year education about the abuse of intoxicating substances in schools, and not the importance of increasing the daily physical activity of students. In the identified studies, only standardized questionnaires were used that included sociodemographic variables, as well as different scales. One study reports a teacher interview on self-assessment of "school climate" (London, at al., 2015). Also, the authors state the use

of an accelerometer to assess MVPA (Moderate to vigorous physical activity), as a way to investigate the connection between increased physical activity and a positive perception of "school climate". When looking at the research objectives of the five identified studies, which concern the connection of physical education teaching, physical exercise or free physical activity with the perception of "school climate", it can be seen that the authors approach the analysis of the research problem differently. It can be concluded that a small number of studies have investigated interpersonal relationships, school satisfaction, cognitive performance and eventual violence through the influence of physical activity on students' perceptions. Some authors believe that a more organized school break could be beneficial for cognitive performance (London, et al., 2015), while others believe that the diversity of students regarding profiles should be taken into account when planning to improve the "school climate" of a school (Manzano-Sánchez, 2022). All the authors of the identified studies state the positive impact of physical activity - physical exercise through the influence of teachers on students during physical education lessons, organized time during school holidays, respect for different student profiles and their engagement in physical education lessons through the encouragement of personal responsibility, as well as through education physically active and sedentary students about the importance of proper nutrition and daily physical activity.

When considering the five identified studies that link the importance of physical education in schools and the perception of "school climate", it should be taken into account that the impact can be twofold. As the mentioned perception depends on how the student perceives the school environment, so it can be evaluated as stimulating for individual development, so the "school climate" can be disincentive and lead to passivity, resistance and aggressive behavior (Koth, Bradshaw, & Leaf, 2008). Therefore, creating a stimulating climate and eliminating students' "school climate" as unstimulating can be a recommendation for practice in schools. For example, it is believed that building a relationship of trust and mutual respect between students, students and teachers would have a preventive effect on the occurrence of violence in schools (Đorđić, 2020). Previous research, in a small number of studies, states that one of the preventive methods of action is to act on the perception of teachers and students through increasing daily physical activity. Also, through organized physical exercise and physical activities in schools, we enable students to work on themselves, participate in various social events and thus develop socio-emotional competencies (Jovanović, 2019). Therefore, it is important for teachers to carefully plan curricular and extracurricular activities, in order to provide students with a certain freedom of thought and action in the domain of their capabilities, so that there is no development of frustration due to the impossibility of achieving various tasks (Sausjord, & Friedman, 1997). Also, organized time during the school breaks can be taken into consideration. Although school breaks offer opportunities for positive play and conflict, it also creates strong implications for how one perceives the climate of their school. Authors are more often concerned with events inside classrooms, and the impact of school holidays is less researched (Leff, Power, Costigan, & Manz, 2003). For students in lower grades, school holidays provide the opportunity to develop social relationships with peers, as well as practice problem-solving and conflict-solving skills (Pellegrini, & Bohn, 2005). The importance of organized time during the school holidays could be considered more significant, because problems between students occur more often because it is a time when they have the opportunity to interact more often than in the classroom (Craig, Pepler, & Atlas, 2000).

There are even fewer studies that state the possibility of the influence of physical activity as less influential than some other factor on the perception of the "school climate" of students. Thus, the Australian authors believe that a specially organized program ("CSC") lasting 3 years could be more effective in preventing the use of intoxicating substances, drugs and alcohol, as well as in the frequency of anxiety and depression among adolescents between 13 and 14 years of age. It is assumed that the "CSC" program could have a more positive effect on the prevention of the mentioned problems among students (84 schools, about 8400 students) than the usual school programs that concern: school education on physical, health and mental education of

students (Teesson et. al., 2014). In addition, it is important to observe the angle of looking at the research problem. Some studies indicate the importance of considering the two-way relationship that relates to the connection between students' sense of satisfaction and positive perception of the "school climate". That is, it is believed that longitudinal research would contribute to clarifying the question of whether student satisfaction affects "school climate" or whether "school climate" affects student satisfaction (Zullig, Huebner, Patton, 2011). Certainly, future research should analyze the impact of different programs of organized physical exercise during students' stay at school, as well as the possibility of acquiring habits that would lead to positive attitudes of students about the importance of daily physical activity. From previous research, the possibility of solving possible negative outcomes (aggression, bad grades, low motivation, bad relations between students and students and teachers) through increasing pleasant activities for students (games, competitions, tasks, innovations in teaching, forums) is highlighted.

## CONCLUSION

From all that has been stated so far, the few authors who investigated the impact of physical exercise on the perception of "school climate" state that students and teachers should be more informed about the importance of physical activity through posters, lectures on negative and harmful substances, health prevention and promotion of a healthy lifestyle, as well as organized time spent during school holidays. Certainly, a well-designed program during the school day, which concerns the increase of physical activity through the school form of teaching or extracurricular activities, can have a positive effect on the feeling of satisfaction of students. Positive feelings certainly lead to the productive action of students in all aspects expressed through: better cognitive performance, better socialization, communication with older students and teachers, but also through solving possible problems during the school day. Future longitudinal research should include an analysis of the impact of different programs of organized physical exercise, as well as an analysis of the impact it has on the perception of "school climate". In this way, the reasons that lead to negative outcomes within the "school climate" would be investigated, as well as possible prevention that would affect a more positive perception of students.

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