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## **Ergonomics and School Sports: Motivations and Requirements of Primary School Children**

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### **Abstract:**

This research aims to highlight the role of physical education and sports in achieving a high formation of the learner's personality and achieving school success, as it is a fundamental factor that works to develop the child's physical, psychological, social, and cognitive aspects. It also works to achieve an integrated graduation profile that allows the graduating learner to integrate and adapt to his/her external environment.

Readings through previous studies and through the documents that educators use during their performance of this activity have shown a significant contribution of this type of activity in achieving a graduation profile that befits the aspirations and requirements of learning in elementary school; which makes them more effective inside and outside the school.

**Keywords:** Ergonomics; School Sports Motivations and Requirements;

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## **1. INTRODUCTION**

Physical activity plays a major role in the development and formation of the child's personality. It works to develop all of his/her physical, emotional, and social aspects, which necessarily reflect on his/her academic performance. Physical activity is considered a cultural and social pillar for the individual and society. It gives the individual a physical reserve that allows him/her to maintain a healthy balance, and it achieves emotional and social adaptation that allows him/her to live and interact with his/her peers with ease. Sport also provides entertainment, pleasure, relaxation, and restoration of activity and vitality. Here, there is a harmony between self-realization and self-esteem, which express the satisfaction of both personal and social needs. Thus, the individual who practices such an activity can achieve a harmonious coexistence with himself and with his external environment. This is the fundamental role of the school, similar to the goals of the elementary school. This is what makes the state, represented in the educational system, aware of this and pays attention to it with great care, through reviewing many decisions, especially those related to the structures, human teams that run and supervise the learners, and even on learning plans and activities themselves. The state reviewed the educational program and put in place curricula for these activities that are in line with the ambitions of this activity.

Ergonomics is a science that deals with the improvement of the individual's performance within the institution by paying attention to all the circumstances surrounding the individual during the performance of his duties within the institution. This is the role of sports and physical activity in improving the performance of the learner in all activities. This is done by making the child enjoy within this framework and feel the recreational aspect that the school provides. This aspect is considered a psychological, physiological and social requirement that contributes significantly to achieving the best of the desired outputs and achieving improvement and development of the educational system.

### **1.2. From the above, we can raise the following questions:**

Does physical and sports activity contribute to achieving harmony between the individual and the school? Does it contribute to achieving an increase in academic achievement? And does the sports activity play a role in organizing the learner's work?



### **1.3. Hypotheses of the study:**

Physical and sports activity directly contributes to achieving the individual's compatibility with the school, where it makes him attached to it and enjoys coming to it.

## **2. Definitions**

### **2.1 Ergonomics**

an applied science that aims to create harmony between work, its environment, and its conditions with the human element, in order to perform work more efficiently and reduce fatigue and stress, achieving a better level of well-being for the individual and better performance for the organization (Al-Mil, 2018, p. 5).

### **2.2 Operational definition of ergonomics**

it is that organization that works to increase achievement and effectiveness through the integration of activities, especially sports activity, which works in a striking way to achieve better education, where it makes the learner enjoy and learn at the same time and makes the school a space for that.

### **2.3 Sports**

"Forms of physical activity that are usually practiced outdoors and lead to pleasure or entertainment and are beneficial in the formation of the body and the mind. Training and competition are not necessary in sports, as is the case in athletics" (Badawi, 2011, p. 406). Primary education: It is the first stage of education, and in Algeria, children enter it to begin basic learning in a constructive and cumulative way.

## **3. Ergonomics**

The concept of ergonomics was first used in 1949 by the English scientist Hywell Murrell. In 1957, the British Ergonomics Research Society was founded, which is still publishing today. In 1959, the International Ergonomics Association was founded. The concept of ergonomics accelerated between 1960 and 1980, when it entered the civil field and developed to study disasters in the stage between 1980-1990, reaching the current stage.

Ergonomics is a compound word of two Greek words, "ergon" and "nomos", which is associated with the individual's adaptation to the work environment. In our study, we associate it with creating a more relational atmosphere between the learner and the school environment and enabling the use of all his potential. The



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concept of ergonomics is also concerned with improving working conditions, developing and increasing production in the institution. Ergonomics studies the interactions and relationships between the individual, his position and role in work, and his representation of this task assigned to him within the work environment and its different conditions.

"De montmollin defined ergonomics as "the technology of communication in a human-machine system," where the system includes the work environment. This makes ergonomics necessarily a multidisciplinary field, as it takes care of the psychological, physiological, social, and technical aspects, as well as all the knowledge related to them". De montmollin considered ergonomics as a conceptual concept that works to satisfy the worker's needs from all aspects to achieve greater effectiveness

### **3.1 Ergonomics in Education**

Lancry-Hoestland defines ergonomics in education as "a working method that proposes to improve the organization of all educational processes, based on human biology and psychology in an anthropological perspective. It includes all the factors of the educational processes, and its goal is to improve the relationships between the student's work, the teacher's work, the equipment and tools used, the space, and also the temporal and academic conditions in which educational projects are carried out."(Salimani, 2019) In other words, ergonomics in education is concerned with the study of all aspects related to the individual, whether physiological, emotional, cultural, or physical, related to the tools and devices used by the learner and the teacher in the processes of building learning that have an impact on the performance of individuals within the school.

As the individual is the basic element in the educational process through the relationship between the learner and the teacher, it is necessary to organize this relationship between them in a framework that is compatible with the psychopedagogical and physical dimensions.

Cognitive ergonomics is the science that tries to interpret and study knowledge in the context of the working conditions to achieve a better performance and system. It studies all aspects related to the cognitive aspect, especially the study of the sensory and psychomotor aspect, as well as the mental processes with all its mental, emotional, and mental elements, such as intelligence, memory, perception, understanding, imagination, and decision-making, which have an impact on the reception and participation in



knowledge(Radhia , 2016, p. 19).

Emotional ergonomics is the science that studies the impact of different emotional aspects on the performance of individuals when they interact with products, systems, and objects that surround them. Emotions are related to satisfaction, love, frustration, confusion, anxiety, attention, and others. Considering that these emotional states have a significant impact on the interaction between individuals and organizations, as well as the quality of performance outputs, we are here to study the quality of learning and its outputs. Emotional ergonomics aims to measure the degree of satisfaction, adaptation, and interaction between the individual and the organization or system, and to determine the degree of acceptance or rejection of the individual, in addition to measuring and identifying the variables and factors that affect the effectiveness of production(Radhia , 2016, p. 19).

#### **4.The goals of ergonomics Ergonomics has several goals, the most important of which are to achieve**

##### **4.1. Comfort**

Individuals in organizations need this element of comfort, which increases their productivity and performance. When it comes to schools, learners need a lot of comfort in order to be more active and contribute to the learning process. This achieves the condition of activity, i.e. that the active element participates in the construction of learning as a positive element. Here, ergonomics makes the child comfortable, with an emphasis on psychological comfort rather than physical comfort, although the latter is also necessary to achieve a higher yield, and it is one of the conditions for learning, as it is related to the readiness to learn

##### **4.2. Efficiency and effectiveness**

It is essential to make the child more effective, as all educational philosophies emphasize the need to make the learner more effective. Academic achievement is directly linked to the child's activity within the educational process, and here the school ergonomics is manifested in a latent way, which makes the child attached to the school and loves to study.

##### **4.3. The safety and security of individuals within the school**

Ergonomics, through its organizational processes, can achieve a significant amount of individual safety and accident prevention. However, we are referring here to the health of students, as exercise makes their bodies stronger, but in a framework that makes their safety a necessary basis by following learning plans



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away from dangerous games that threaten their safety

### **4.4. Time management**

The ergonomic system works to optimize the use of time and energy, as the work map makes enough time to manage the affairs of the institution in a short time and less effort.

### **5. Sports**

Our ancestors have contributed to leaving a cultural heritage related to sports, as they wrote many books about its aspects that surround physical education and sports activity, and its reflections on therapeutic, psychological, social, and all value systems.

"For example, Averroes made a major contribution to the establishment of movement and physical education, or what is called the movement of the organs to manage something. Ibn Nafis contributed when he classified his book - The Summary - between movement and physical rest. Ibn Sina also gave when he defined the types of sports in his book "The Canon". Many Arab and Muslim thinkers also left works on sports, their types, and their role in the processes of organic, social, and psychological treatment of individuals, similar to the productions of Ibn Miskawayh, Al-Hasan Ibn Al-Abbas, Al-Ghazali, and others. They discussed the benefits of sports for the individual and the group."

Sport is one of the human activities that has been expanding and branching out as a result of the increasing interest in it. During this expansion and branching, it was necessary to adhere to the scientific framework in its organization, and thus management became the basis for all success in it. This makes sport occupy a high position among individuals, which makes it necessary to pay attention to it and structure it.

The roots of sport go back to ancient civilizations, as those civilizations were interested in physical activity, such as the civilizations of Babylon, Egypt, and Greece. They made sport an indicator of strength and made it an integrated and complex unit that increases the individual's efficiency in both physical, psychological, and intellectual aspects. The effect of physical activity is not limited to muscle strength, but includes all the aforementioned aspects.

"The roots of sport go back to ancient civilizations, such as the civilizations of Babylon, Egypt, and Greece. These civilizations were interested in physical activity and made sport an indicator of strength. Sport was also seen as a way to improve the individual's physical, psychological, and intellectual abilities. The



effect of physical activity is not limited to muscle strength, but also includes all the aforementioned aspects.

The Prophet's biography also contains several positions on physical activity as a recreational activity. It is said that Imam Ali said: "Relieve your hearts from hour to hour, for if the hearts become tired, they will become blind, and if they become blind, they will not understand anything." This is one of the evidences that physical activity has been used in the past for psychological treatment and to relieve the burdens of life. Sport also strengthens the relationship between the body and the mind."

"Sport is a human activity with cultural and social dimensions that is practiced in a way that is characterized by justice and social equality. It aims to develop society, strengthen ties of friendship between countries, and contribute to social integration processes. Sport also gives individuals the opportunity to develop their cognitive, health, and psychological aspects, and to develop their physical and skill abilities."

"Play is a need of the individual, especially for children. Many theories have discussed the role of play in releasing excess energy, while others see it as a way to charge energy. Still others consider it a means of relaxation, and some see it as a biological tool that serves the individual himself, making him a cause in innovative processes.

Play is a free activity that takes place in a temporal and spatial framework defined by some organizing conditions, even if it is between individuals themselves without an organization that structures this play. It represents a manifestation of life that makes pleasure fall into it, which is what distinguishes play from other activities."

"Play is a phenomenon that combines thought and behavior. One author said that culture is a fabric of ideas, ideals, beliefs, skills, tools, things, ways of thinking, habits, and different institutions in which every member of society is born. It is also the way individuals make a living, the types of sports they practice, the stories they tell, the heroes they admire, the music they perform, the way they take care of their families, the means of transportation and communication they use, their cultural and political systems, and the meanings of rights, duties, and ethics. All of these things and many more that cannot be enumerated constitute the culture of the people.

Here, through these interrelated relationships between play and culture, it is clear that culture is influenced by play and may even be an essential tributary to it.



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Play satisfies the different and essential needs of the individual. Therefore, social life, which reflects the culture of individuals, may acquire forms that are suitable for what individuals do during play. And it is through play that society expresses its interpretations of life. This does not mean that play turns into culture, but rather that culture in its first appearance has the characteristic of play. This explains why play appears through cultural phenomena."

"The goal of recreation is to achieve happiness for the individual. When an individual engages in physical activity, he or she experiences a sense of accomplishment, fellowship, and respect. These feelings are associated with the need for self-realization, self-esteem, and the desire to serve others. When an individual competes in a team sport, he or she must work hard to win. This effort can lead to a feeling of psychological relief and relaxation, which can in turn lead to happiness.

Recreation can also help individuals to develop a sense of belonging. When children participate in physical activity at school, they often form strong bonds with their peers. These bonds can help to reduce stress and anxiety, and they can also lead to a greater sense of happiness.

Overall, recreation can be a powerful tool for promoting happiness and well-being. It can help individuals to achieve their full potential, and it can also help them to connect with others and build strong relationships."

"Children also feel happiness and a kind of recreation when they engage in activities that they see as risky and involve new experiences in their search for truth. This is a hidden feeling in which pride and pride are mixed with a rush of strength and courage. The love of participating in new experiences nourishes the individual with a feeling of happiness and strength. Children's happiness is also linked to their achievement during the practice of recreational activities, such as sports. A child's attempt to achieve victory makes him feel the ecstasy of happiness."

"Principles of recreational activity during sports practice:

1. The individual needs physical activities that help him in the growth processes, as they bring him a sense of happiness.
2. Developing the child's performance, which makes him feel a kind of progress and development in performance, and increasing the child's skill, and this makes him feel happy, which is reflected in all his behaviors, even in his academic performance.





3. Accustoming children to practicing sports activities even in narrow or closed places that may encounter their living conditions.
4. Taking the hand of the learner during practice so that they do not feel the difficulty that may reflect negatively on them.
5. Accustoming children to active life, where the child becomes active, characterized by vitality and practice, and can solve the problems that confront him.
6. Encouraging individuals to practice their hobbies and practice them.
7. Organizing the time for practicing sports activity."

### **5.1. The role of the school in achieving pleasure:**

Pleasure within the school is an integral part of its educational role, as all educators emphasize the need to take care of this aspect, which is reflected positively in effective learning outcomes. The school's responsibility in achieving physical education activities for learners is summarized to achieve:

1. A fun education and creating an atmosphere that makes the school a recreational space: by satisfying the need for play among learners away from learning processes that exhaust the learner and even the teacher, and paying attention to physical activities that make the child more attached to the institution, and considering the child is inclined to play and physical activity.
2. Supervising fun activities related to the educational curriculum or activities related to it or even outside the curriculum: Activities that go beyond the curriculum are considered a part that serves learning plans, but rather consolidates it. The more the school works to create an atmosphere dominated by recreational activity, such as physical activities, the more life in the school is, and this makes the school a preferred place for students, and makes them make more efforts, which increases production and achievement.
3. Providing school spaces that enable the practice of sports activities to achieve pleasure: The more the administrative and educational staff of the educational institution (school) work to create diverse spaces dominated by recreational activity, the more the institution is more organized and more active, which is reflected positively on the activity of the learner."

### **5.2. The importance of physical activity for the human body:**

Our bodies are made up of bones, joints, muscles, and nerves. When our muscles contract, they pull on the bones, which moves them from the joints,



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causing movement. These components can be damaged if the individual neglects to maintain them, and this can only be done through physical activity. We will try to learn about these elements:

- **Bones:** The human body is made up of 206 bones, which help it in movement. They are a storehouse of organic salts. Bones are solid in structure and are a living formation, as they are made up of living cells that receive food and oxygen. They also get rid of waste, just like the rest of the body's cells. Lack of physical activity makes them weak, sick, and easy to break. Here, it is necessary to emphasize the need for physical activity that works to strengthen the bones.
- **Joints:** Joints are the meeting point of two or more bones. To keep joints flexible and achieve their maximum range, physical education should be practiced to ensure an increase in the thickness of the cartilage that feeds on the synovial fluid that surrounds these joints. Lack of such activity makes them thin and weak, unable to withstand stress.
- **Muscles:** The human body contains more than 600 muscles, including skeletal muscles such as the muscles of the arm, leg, and back, which are voluntary muscles. There are also smooth muscles such as the stomach and arteries, which work involuntarily. The heart muscle is similar to skeletal muscles, but it is involuntary. All of these muscles get stronger with exercise and weaken without it.
- **Nerves:** Our bodies are made up of a significant number of nerve cells. The brain and spinal cord are the center of information and instructions. Lack of physical activity makes the effectiveness of this system weak."

### **5.3. The social approach to the study of sport:**

- Sport has become a social activity, as it is related to the core of society and one of its most important elements, namely the individual during his practice, whether in individual or group activities where interaction occurs. Even those who do not practice physical activities have become followers of this field. This requires the need to "support the system of physical education and sport as an important social and cultural system. The pressing sports issues of a social and cultural nature push us to link sport with various social sciences, and also to put possible concepts for this link through establishing the rules for new subsystems such as the subsystem (sociology of sport) so that these subsystems and research cover



all the social and cultural issues in sport"(Al-Khouly, 1996, pp. 6-7). The clear social character of the study of the practice of sport and physical education is evident through the actors who form society on the one hand and the subsystem in the practice of sport on the other hand. This makes sport a social phenomenon that is studied through the branch of sports sociology."

#### **5.4. The goals of physical education and sports in primary education:**

Sport plays an essential role in the educational process, as it is a basic education that accompanies the learner in all aspects. We can list the following goals according to their meanings:

- **Functional dimension:** By relying on movement (running, walking, throwing, and jumping ...), this makes it a guarantee of true balance, within the framework of a coordinated development of the entire body, where it seeks to develop the two motor systems (muscular system, skeletal system), to give the learner a physiological possibility that works to correct his posture and support his spine that prevents him from the effects of sitting for long hours on the school benches.
- **Utilitarian dimension:** By practicing sports and enjoying the game, the child can discover himself, to be able to overcome some of the difficulties that face him, his knowledge of himself through the identification of his strengths to exploit them and his weaknesses to cover them and avoid them makes him exploit all his possibilities.
- **Moral dimension:** Overcoming and overcoming the obstacles and barriers that face him, whether from the competitor (opponent), or his own body, or overcoming his psychological pressure that may be imposed on him by his external environment (Ministry of National Education, 2016, p. 2).

#### **5.5. Contribution of physical education in achieving the profiles:**

Physical education has not reached its full potential in primary education for several reasons, perhaps the most important of which is considering it a recreational activity and not a learning activity like the rest of the activities, on the one hand, and on the other hand, what is related to the limited components, whether it is teachers, directors or inspectors in terms of the subject of knowledge and pedagogy, as the lack of structures and means played its role in the decline of this activity, especially in its primary stage, which lacks the minimum conditions and means, but rather their absence.

Where the goals of physical education cannot be limited to building and



strengthening the body only, but it must intervene significantly to contribute to the development of the child's personality in all its aspects (sensory, motor, cognitive, and relational) through the control and organization of their behaviors and the contribution to building their future projects, which is what highlights the following:

1. Cognitive dimension: By getting to know his body and feeling it, and getting to know his surroundings, and preserving them.
2. Relational dimension: Through participation in cooperative work that requires teamwork and concerted efforts, and being possessed of the sporting spirit and the critical personality.
3. Organizational dimension: Where physical activity works to try to locate in space and use the individual's senses for movement and guidance, and to appreciate this movement and control it, and respect its pace and rhythm.
4. Executive dimension: Through the control of the child's basic movements, and the realization of basic movements, based on sequencing, coordination, and alignment, and the control of the use of the tool (Ministry of National Education, 2016, p. 5.6).

#### **5.6. The goals of physical education and sports:**

Physical education and sports in the educational institution work to confirm the sensory-motor and psychological-social behaviors and refine the individual's personality who belongs to these institutions in the following aspects:

- Physical aspect: This activity seeks to develop and improve the child's performance in his physiological qualities and factors of movement execution and improve his performance in this aspect, and it also seeks to make him control and manage his efforts and distribution, and this is its ergonomic core, as it works to adjust the field of vision and its estimation, and control the sources of energy and mobilize them, and adapt to the positions and manage and coordinate them during them to maintain balance during the process of raising physical performance.
- Cognitive aspect: Physical education activity seeks to know the composition of the body and the extent of the impact of efforts on it, and to know the laws that affect his body, and the rules of first aid, and to know and implement health rules, and this activity also contributes to increasing his health capacity and knowing its limits.



- Social aspect: Physical education activity aims to make the learner control his whims, through his acceptance of others, and how to deal with others, and enjoy the sporting spirit, the spirit of responsibility, and coexistence within the group and the active and positive contribution to the preservation of the group and the achievement of adaptation in the living environment."

## **6. Conclusion**

In conclusion, ergonomics and school sports are important for the development and growth of primary school children. They can help improve children's physical and mental health, increase their ability to learn and focus, and develop their social and interaction skills.

Primary school children need many factors to help them grow and develop properly. These factors include:

- Healthy diet
- Enough sleep
- Regular physical activity
- Psychological motivation and support

School sports can provide children with all of these factors, as well as many other benefits, such as:

- Improved cardiovascular health
- Stronger bones and muscles
- Improved motor skills
- Increased endurance
- Improved cognitive skills
- Lowered levels of stress and anxiety
- Enhanced self-confidence
- Developed social and interaction skills

Therefore, integrating ergonomics and school sports into the primary school curriculum can contribute to the holistic development of children and make them healthier, happier, and more successful in life.

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