

## Influence of physical activity on the social and emotional behavior of children aged 2-5 years

### Influencia de la actividad física en la conducta social y emocional de niños entre 2-5 años

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#### ABSTRACT

**Introduction:** The study of social and emotional behavior in children is associated with their responses to a certain stimulus, inferring an analysis of the factors that cause it and the design of the intervention strategies according to the needs established.

**Objective:** The present paper is aimed at the implementation of a group of physical and recreational activities that contribute to enhance the social and emotional behaviour of 25 children aged 2-5 years old, which show social and emotional behaviour problems.

**Methods:** In the elaboration of the proposal were interviewed 30 workers that take part in the research at 6 de Diciembre School in Quito, plus 40 members of the community directly related to the sample studied (family and neighbors). The research studies several indicators of social and emotional behaviour (emotional state, behaviour, emotional and socialization disorders) before and after the implementation of the proposal for a 12 month period.

**Results:** It is demonstrated through the Wilcoxon signed-rank test a significant improvement throughout the research process (0,018) with 7 negative ranks and a tie in favour of the post test.

**Conclusion:** The strategy designed had a positive influence in the social and emotional conduct among of children aged 2-5 years, demonstrating that the physical activity can become an alternative of social intervention.

**Keywords:** Physical-recreational activities; social and emotional behavior; Children; Ecuador.

## RESUMEN

**Introducción:** el estudio del comportamiento social y emocional en niños está asociado a las respuestas emitidas por ellos frente a un estímulo determinado, infiriendo un estudio de los factores que lo provocan, y el diseño de estrategias de intervención según la necesidad establecida.

**Objetivo:** la presente investigación tiene por objetivo la implementación de un grupo de actividades físico-recreativas que contribuyan a mejorar la conducta social y emocional de 25 niños entre los 2 a los 5 años de edad, los cuales poseen problemas de comportamiento social y emocional.

**Métodos:** en la elaboración de la propuesta se ha entrevistado a 30 trabajadores que intervienen en el proceso investigativo en la Escuela 6 de diciembre en Quito, más 40 miembros comunitarios directamente relacionados con la muestra estudiada (familiares y vecinos). Se estudian varios indicadores de comportamiento social y emocional (estado emocional, comportamiento, desajustes emocionales y de socialización) antes y después de implementada la propuesta durante 12 meses.

**Resultados:** se verifica a través de la Prueba de los Rangos con Signo de Wilcoxon una mejora significativa en el proceso de investigación (0,018) con 7 Rangos negativos y un empate a favor del postest.

**Conclusión:** la estrategia diseñada influyo positivamente en la conducta social y emocional de niños entre los 2-5 años, demostrando que la actividad física puede contribuir como alternativa de intervención social.

**Palabras clave:** Actividades Físico-recreativas; Comportamiento Social y Emocional; Niños; Ecuador.

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## INTRODUCTION

According to Reiner, Niermann, Jekauc, & Woll <sup>1</sup>, many are the benefits to human health of practicing physical activities regularly, since there is evidence of their importance in keeping a quality physical and mental state <sup>2,3,4,5</sup>, moderate physical activities are a key factor for health <sup>6,7</sup>, although they must have a balance at all times through adaptability and efficiency <sup>8</sup>, by guaranteeing their design based on a diagnosis or ex ante evaluation <sup>9,10</sup> delimiting key variables <sup>11,12,13,14</sup>, which will allow detecting essential barriers to carry out the physical activity with the sample selected <sup>15</sup> and model pertinent actions as part of the content of a specific program of physical activity.

Meléndez <sup>16</sup> describes concretely some of the benefits of physical activity, such as the creation of a habit for a lifetime, which favors the development of coordination abilities and skills like strength, resistance and muscle flexibility, the reduction of obesity and osteoporosis, a better self-esteem and less anxiety.

Recreational activities renew strength and the spirit after the fatigue, since they are executed voluntarily during free time, motivated for personal satisfaction <sup>17</sup>, and they have a strong educative intention <sup>18</sup>, especially related to social and personal responsibility, and as a factor of influence in the pro-social and antisocial behavior of the child and the teenager <sup>19,20</sup>.

Conduct in human beings is a way to behave in a certain or general situation <sup>21,22</sup>. In the case of the children, conducts are delimited through external and internal

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indicators that work as determining factors <sup>23,24</sup>, and it includes studies of consumption <sup>25,26</sup>, of the difficulties of behaviour in those ages <sup>27</sup>, emotions and focus in the relations with adults <sup>28,29</sup> and the discriminatory factors as an influencing factor in the behavior at short and long term <sup>30</sup>, among others.

One of the most studied factors in the behaviour of children in school and pre-school ages are related to non-regular emotional disorders, which are normally caused by the development of the child in dysfunctional families <sup>31,32,33</sup>, which present various factors of social exclusion that cause health exclusion <sup>34</sup>, requiring specialized attention not only of the psychologist, the doctor or the social worker, but of other sciences that contribute to the teaching and formation of the human being.

In the case of the science of physical activity and sports, the study of the behaviour of kids prioritizes the variables related to the motor movement<sup>35</sup>, sedentary habits <sup>36</sup>, associated nutrition <sup>37</sup>, the psychological benefits of practicing physical activities <sup>38</sup>, and the individualized attention of the coach and the parents <sup>39,40</sup>, just to mention the most important aspects.

The strategy of the present paper is based on the science of physical activity and sports, adapted to the needs and possibilities of the sample studied. In this case, the research aims to implement a group of physical and recreational activities to improve the social and emotional conduct of children.

## METHODS

The sample includes 13 boys and 12 girls (25 in total) aged 2-5 years old with problems of emotional and social behaviour, implementing a proposal of physical-recreational activities in 6 de Diciembre school in Quito, Republic of Ecuador. The activities will be implemented for 12 months and will count on the support of specialists that contribute with the improvement of the process: pediatricians, child psychologists, speech therapists, nutritionists, social assistants and professors dedicated to physical and therapeutic activity.

On the other hand, for the correct elaboration of the proposal were interviewed several actors of the process such as 30 workers and/or professionals of the school and 40 members of the community (parents, close relatives, neighbours). The indicators studied are related to the emotional state, behaviour, emotional disorders and the socialization state of the sample studied.

It will be used SPSS v21 to process the general data with the non-parametrical statistics of the Wilcoxon signed-rank test, using a significance level of 0,05, establishing pertinent comparisons before and after (Post-test and Pre-test) the research proposal is implemented. In addition, Microsoft Excel 2013 will be used to tabulate the data.

### Methodology

The structure of the proposal implemented for 12 months is listed below (tables 1, 2, 3, 4).

**Table 1.** Proposal No.1: Community Participation Games

No	Activities	Goals	Organization	Participants
1	Climb a tree	Foster respect and achieve full participation in a healthy environment.	Scattered	Boys and Girls
2	Variant of the musical chair	Favor joy and cooperation among the children	Groups	Children and members of the community
3	Reach the ball	Strengthen unit and cooperation through entertainment and joy.	Rows	Children and members of the community
4	Stilts race	Favor enjoyment and joy through competitions	Rows	Boys and Girls
5	Sacks race	Favor enjoyment and joy to reach the finish line.	Teams	Boys and Girls
6	Shape the figure	Develop organization and discipline through the game	Individual	Boys and Girls
7	Guess the color	Socialize by identifying forms, color and size	Individual	Boys and Girls

**Table 2.** Community Recreational Activities

No	Recreational Activity	Goal
1	Botanic Garden, Supplementary Activity	Appreciate the beauty of nature, develop love and care for it.
2	Amusement Park, Supplementary Activity (Narration)	Socializing in the group with the community and relatives
3	Visit to the Zoo, Supplementary Activity	Sing, know different wild and domestic animals, their characteristics, foster love and care
4	Visit to the museum	Appreciate art, historic places and monuments
5	Visit to the aquarium	Know different animals, their habitat
6	Visit historic places	Get kids related to the world around them. Admire the architectonic heritage of the city, specially Quito

**Table 3.** Proposal No.2: Socializing Games

No	Activities	Goals	Organization	Participants
1	Who finishes first	Foster respect and participation in a healthy environment	Rows	Children and members of the community
2	Pass the ball through the tunnel	Favor joy and cooperation among the children	Rows	Children and members of the community
3	The wolf and the rabbits	Foster unit and cooperation through enjoyment and joy	Scattered	Children and members of the community
4	Blind chicken	Favor enjoyment and joy, respect for partners	Scattered	Children and members of the community
5	Gymnastics routine of the vowels	Strengthen bonds with joy and amusement	Groups	Children and members of the community
6	Dice of the geometric figures	Develop organization and discipline through the game	Teams	Boys and Girls
7	Psico- Ballet	Foster love through creativity	Groups	Boys and Girls
8	Event of the mother with the son	Strengthen bonds with joy and amusement	Groups	Boys and Girls

**Table 4.** Board Games

No	Recreational Activity	Goal
1	Puzzle	Mutual help and collectivism, attention, observation and motivation.
2	Capitol with the family	Mutual help and collectivism, attention, observation and motivation.
3	Shape the figure	Mutual help and collectivism, attention, observation and motivation.
4	Guess the color	Mutual help and collectivism, attention, observation and motivation.

## RESULTS

The results to questions 1 and 2 can be seen in the following tables (tables 5-6):

**Table 5.** Answer to question number 1. Do you think the community should carry out diverse activities for children without family support?

Answers	Workers		Community	
	Amount	%	Amount	%
YES	16	53,33	14	35,00
NO	14	46,67	26	65,00
TOTAL	30	100	40	100

**Table 6.** Question number 2: Which of these activities you consider should be carried out with children without family support?

	Neighborhood and community projects	Excursions	Traditional games	Others	TOTAL
Amount	13	8	18	1	40
Percentage	32,5	20	45	2,5	100

This question is written in more detail in the discussion section

Most of the community members surveyed chose traditional games as essential components to take into account in the contents of the physical-recreational activities to be designed (18: 45%), while neighborhood and community projects are essential for community activities (13: 32%). The other components to take into account determined less selective votes, although somehow all of them are considered for the design and implementation of the proposal.

Question number three (Which areas would you recommend to develop activities with children as a way to satisfy their physical and recreational needs?) showed diverse answers by the community and the professionals surveyed, since their experiences and needs vary. The answers include schools and special areas exclusively designed for that purpose. For the research, given advantages and disadvantages, we have chosen the 6 de Diciembre school as an essential field of action to implement the proposals of physical-recreational activities, taking into account other areas as supplementary to the process.

In regard to the support of the teachers and the community to question number 4 (In case of the implementation of a proposal of physical and recreational activities at 6 de Diciembre school, what kind of support would you give?) the record of data showed the following results (table 7):

**Table 7.** Answers to question number 4

	<b>Professionals</b>	<b>%</b>	<b>Community</b>	<b>%</b>
High	24	80,00	18	45,00
Average	6	20	15	37,5
Low			4	10
None			3	7,5
Total	30	100	40	100

In general, the support of the professional has been high (24: 80%), only an average of 20 % (6 subjects), showed less willingly to support the project due to problems of time and management, which should be considered to plan their working times out of the schedule of the physical and recreational activities.

On the other hand, the community is divided, although most of them (45%: 18 subjects) seemed willing to support the process; 37,5% (15 subjects) showed a medium willingness and 10 % (4 subjects) with low percent of willingness and non willing at all only three people (7,5%).

The previous data shows the necessity of carrying out a work for them to become aware of the importance and benefits of practicing physical and recreational activities in the community with children and their families in order to correct unfavourable social indicators.

It is applied a diagnosis before and after implementing the proposal (Pre-test and Post-test). These tests describe and compare several indicators of the social and emotional behaviour. The results are described below (tables 8-9):

The initial test showed that 14 of the children studied present tantrum problems, while 23 showed cry issues, 6 with lack of appetite and 23 with isolation.

The initial study determined the existence of problems in the indicators of social behaviour in seven subjects with problems in their emotional state, four showed emotional disorders, 11 with behaviour problems and seven subjects with socialization issues.

**Table 8.** Initial test of the social behavior indicators

<b>No</b>	<b>Tantrum</b>	<b>Cry</b>	<b>Lack of appetite</b>	<b>Isolation</b>
1	1	1		
2			1	1
3	1	1		1
4		1		1
5		1		1
6	1	1		1
7		1	1	1
8	1	1	1	1
9	1	1	1	1
10		1		1
11	1	1		1
12	1	1		1
13	1	1		1
14		1		1
15	1	1	1	1
16	1	1		1
17		1		1
18		1		1
19	1	1		1
20		1		1
21	1		1	
22		1		1
23	1	1		1
24	1	1		1
25		1		1
<b>Totals</b>	<b>14</b>	<b>23</b>	<b>6</b>	<b>23</b>



**Table 9.** Initial test of the emotional behavior indicators

<b>No</b>	<b>Emotional Behavior</b>	<b>Emotional Disorders</b>	<b>Behavior</b>	<b>Socialization</b>
1	1			
2				1
3	1	1		
4				1
5		1	1	
6	1			
7				1
8			1	
9	1			
10			1	
11		1		
12			1	
13				1
14				1
15			1	
16				1
17			1	
18			1	
19			1	
20	1			1
21			1	
22	1		1	
23			1	
24		1		
25	1			
<b>Totals</b>	<b>7</b>	<b>4</b>	<b>11</b>	<b>7</b>

Once the initial diagnosis was implemented detecting social and emotional problems, the proposal of physical and recreational activities designed was put into practice, which counted on the support of other sciences that contributed to improve the process, such as speech therapy, nutriology, pediatrics, social assistance, children psychology and the support of families and teachers.

The implementation of those activities showed the results described on the tables below (Tables 10 and 11):

**Table 10.** Final test of the social behavior indicators

No	Tantrums	Cry	Lack of appetite	Isolation
1		1		
2				
3	1			1
4				
5				
6				
7				
8		1		
9			1	
10				1
11	1	1		
12	1	1		
13				
14		1		
15				1
16	1			
17		1		1
18		1		
19	1			1
20		1		1
21	1		1	
22		1		1
23		1		
24				1
25		1		1
<b>Totals</b>	<b>6</b>	<b>11</b>	<b>2</b>	<b>9</b>

The post-test, after implementing the proposal for 12 months and with the support of several specialists, concluded the existence of six subjects with tantrum issues, although less intense than in the pre-test or initial test; 11 subjects still with Cry problems, two with moderate lack of appetite and nine with isolation problems.

**Table 11.** Initial test of the emotional behavior indicator

No	Emotional Behavior	Emotional Disorders	Behavior	Socialization
1	1			
2				1
3		1		
4				1
5		1		
6	1			
7				
8			1	
9				
10			1	
11		1		
12			1	
13				1
14				
15			1	
16				1
17				
18			1	
19				
20	1			
21			1	
22				
23				
24		1		
25	1			
<b>Totals</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>4</b>

After implementing the proposal for 12 months, with the support of specialists in other sciences, were detected the following problems: four subjects with problems in their emotional state, four with emotional disorders, six with behaviour issues and four with socializing problems that persist.

In order to establish significant differences before and after the treatment, is used the Wilcoxon signed-rank test, establishing pertinent comparisons in two diagnoses performed and setting the existence or not of improvements in the process.

## DISCUSSION

The design of the proposal of the physical and recreational activities starts from the analysis of the surveys applied to the community members and professionals of the institution. In that regard there is consensus with Barroso and collaborators in the necessity of doing an ex ante evaluation of the project<sup>9,10</sup>, setting the key variables of the process, as it is affirmed by various authors<sup>11-14</sup>. These variables are described below:

The answers of the workers to question 1 showed almost a statistic balance between Yes and No (16: 53,33% and 14: 46,67% respectively) while the answers of the community showed 14 Yes (35%) and 26 No (65%). That proves that most of the surveyed people think that the community should not carry out activities, something that indicates ignorance of the role of the community as a significant influence in the social behaviour of its inhabitants. According to the authors some variables of social exclusion are present in the process, as it is affirmed by Agost, & Martín<sup>34</sup>, where it is noted the significant influence of the parents in the process<sup>40</sup>.

The Wilcoxon signed-rank test determined the existence of significant differences between the initial (Pre-test) and final (Post-test) diagnoses, with an asymptotic significance of  $p=0,018$ , lower than the significance level expected (0,05) and with seven Negative ranks and a tied rank in the comparison of the results. In that regard is ratified the contribution of the physical activity as a process of personal and social responsibility<sup>19</sup>, and as a diagnosis variable of the behaviour of pro-social and antisocial conducts of the child, being an instrument to educate and form the child as a social being<sup>20</sup>.

For that reason, the proposal of physical and recreational activities designed and implemented during 12 months have contributed positively as a viable alternative to reduce problems of social and emotional behaviour in the children undergone to study, along with traditional treatments (pediatric, psychologic, of speech therapy, nutritional and specific social assistances).

According to an informal interview made to professionals related to the process, this integrated system achieved an improvement in terms of quantity, quality and time in the recovery of the child with problems of social and emotional behaviour, higher than those who focused only in traditional treatments, without the presence of physical and recreational activities. That infers an optimizing character of the sciences of physical activity and sport with positive influence in social and emotional behaviour. In that sense, it is recommended to carry out an experimental study between both treatments.

## Conclusions

1) The theoretical and methodological fundamentals tackled support the fact that the peculiarities of the development of the child and their surrounding environment favors individual attention and specially those socialization aspects that demonstrate mistakes in the emotional disorders treated through physical and recreational activities.

2) The results of the diagnosis demonstrate emotional disorders by lack of socialization when doing these activities, since they isolate, do not participate, just eat and their behaviour is inappropriate so it thwarts their relationship with the rest.

3) The main feature of the proposal of physical activities is determined by two groups that respond in a positive way to the improvement of socialization in children without family support, given its great biological, psychological, pedagogical and sociological value, which turn it into a necessary means to the formation of the personality.

4) The proposal applied has contributed to enhance the emotional state of the children reducing emotional disorders and inappropriate behaviour, favouring satisfaction and joy through open air activities in which they can release energy and emotions in groups.

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