169 - THE PRACTICE OF PHYSICAL ACTIVITY AND ITS RELATIONSHIP WITH THE LEVEL OF MOTOR COORDINATION IN CHILDREN WITH DOWN SYNDROME

EDILSON FERNANDO BORBA;
L. F. ROSA
Universidade da Região de Joinville
Depto. De Educação Física - Joinville/SC/Brasil
edilson_f_b@hotmail.com

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It is known that children with Down Syndrome must be truly included in physical activities, it is not relevant for them just to stay in the same place of the others or to participate also in just a few exercises, but they must be a part of the group and work together as real partners, even if it requires teacher/friendship helping. According Werneck (1995) people with down syndrome have the hability of learning, depending on the stimulation received and on how the emotional sistem was improved by the year. Therefore, physical exercise should bring good results and performance.

In children with Down Syndrome, the movements domination depends on how how the child has learned what has been teached to him, so, disable children can not overcome the drawbacks that are offered in the education to children without disabilities (GORLA, 2007).

The Down Syndrome is a genetic modification occurred during or immediately after the conception, and it is characterized by the presence of autosome 21, where the individual shows three chromosomes instead of two, totalizing 47 chromosomes in all cells, indicating the trisomy. To this modification it is called simple trisomy.

According to Werneck (1995), it was in the mid-twentieth century, with advances in genetic research, that the french cientist Jerôme Lejeune reformulated the conception os “disability”, and describing that the trisomy was about a genetic accident in which the cromosome 21 had one more gene than the commum. And that is why the Down Syndrome became called trisomy 21.

“Most of Down Syndrome anomalies are observed since birth, these changes prevent the normal development of children, this retardment can be noticed, mainly, between the sixth and tenth week of life” (ESCAMILLA, 1993, p.39).

About behavioral relationship, Buckley; Sacks (1987. apud Casarin, 2003) mention that their psychological characteristics are made according to where they live, and not directly to the Down Syndrome.

The children development is also connected to everyday activities and when we think in activities we should think in not competitive games which provides satisfaction as previously discussed. But when it is about activities that have the intention to reduce the deficit in disable people, it is important to know what are the real benefits tha those can bring to a trisomy 21 person.

The activity can be approached as a cooperative game, what gives a relation between body and environment. The activities are based in the repetition of motor gestures that consolidate in the person (GUTTON, 1973). The activity begins exploring their own bodys and much of the time, disable children do not have the opportunity of practicing it, because their body does not allowed them.

Many studies indicate that while playing, children can develop many abilities both intellectual and motor, capacities as criativity, cooperation, concentration, language, motivation and motricity, all important to make a good development in the social environment (LEONTIEV, 1991. VYGOSTKY, 1991. KISHIMOTO, 2001).

The practice of physical activity is an important appearance for the population with Down Syndrome which have less opportunities of living and experiencing activities that gives the possibility of developing performance. Therefore, exercise is important to children who have trisomy 21 (EICHSTAEDDT; LAVAY, 1991. VASCONCELOS, 1991. PITETTI e CAMPBEL, 1991).

Le Boulch (1983) states it is necessary to provide the child the opportunity to develop the best possible way, in a proper environment, through activities that support the organization of their sensorimotor behavior and their social training.

It is described by Hurtado (1985) that referring to recreation, clearly mentions the need for the child to participate in these activities, which involves running, galloping and move with hula hoop. Such experiences expand their development,

The motor skills of children are required in daily life, both at school and at home. Not infrequently, these habilities, denominadas de atividades motoras básicas, they are seen as the basis for specialized motor activities, in larger dimensions than just playing (TANI; et al, 1988). It is the brain's ability to balance the body's movements, more specifically, the muscles and the joints. If a motor deficiency is identified in a child, one should resort to activities that stimulate the brain so that it can balance the deficits.

In accordance with Turvey (1990), the coordination necessarily involves own relationships, multiple among several components, set on a scale spatiotemporal.

Physical education, through the use of physical activity, exercise, recreational games, assists in the formation of the individual (RODRIGUES, 1993). To link the activities to the day-to-day child studies, this develops without direct intervention, because the activity allows the child to make its own way and how to feel more comfortable, also avoiding exclusion, for not knowing or not being able to do something.

According to Toseti (1997) activities should be spontaneous, creative and bring us pleasure. In play children can develop some important skills, such as attention, imitation, memorization and imagination. Child's socialization capabilities mature, through interaction and the use and testing of rules and social roles.

Method

The study was characterized as a quantitative, descriptive and cross-sectional field. The sample was composed of 15 individuals participating in the Project Mãe D'água, the city of Joinville - SC, the sample was divided into eight males (53.3%) and 7 females (46.7%) aged between 8 and 12 years. These children voluntarily participated in the study. It was used to determine the levels of wide coordination of the KTK test protocol (GORLA 2007) they are, balance beam, monopedais jumps, leaps and transfer to a side platform. The data collected in the test were analyzed according to refência tables of the KTK test, thus setting the Motor Quotient (MQ) of the task. In the test, the questionnaire applied was divided into questions light activities, heavy and inactivity, thus, light activity were defined as those with little energy expenditure, such as hiking, for activities with high energy expenditure, swimming and, for inactivity, was defined as the time used to watch TV.

The survey had a favorable opinion of the Ethics Committee (CEP / UNIVILLE) research under the number 830 550 and all participants performed the test and those responsible answered the questionnaire on physical activity and signed the

informed consent. The collected data were organized in an Excel spreadsheet and analyzed with statistical average, standard deviation and reference tables. For statistical analysis we used Student's t-test to compare groups.

Results analysis

The data were presented in tables and graphs on average, standard deviation and percentages, addressing variables such as age, gender classification KTK, Motor Quotient and physical activity. Statistical analysis was performed using correlation test and t-test for comparative analysis between genders.

At first general data will be presented in order to characterize the structure of the study, then a comparison between genders and the performance in the KTK test, finally, a graphic engine performance relating to the age of individuals.

The average for the group of large motor coordination tests on evidence used in KTK were classified as Low, averaging 61.8%. The results show that the majority of children (73.3%) shows a low level of coordination. In total, 100% of the study participants are below the considered normal classification. In accordance with Mansur and Marcon (2006) behavior is affected by the failure of coordination between efferent and afferent commands, therefore, these people have more difficulty in carrying out activities aimed at motor behavioral evaluation.

When we divided according to the results of the test applied, without distinction of groups, were obtained a better average (55.5) for testing monopedal jump, and as worse average performance, platforms transfer test with a score of 33.2 (Table 01).

Table 01 - General sample data

Gender	Class. KTK	Age	QM Balance Beam	QM Monopedal Jump	QM Side Jump	QM Platforms Transfer	Score
M	Low	11	60	49	42	34	64
M	Regular	9	62	80	52	36	75
M	Low	10	49	60	35	34	62
M	Low	12	46	79	46	28	67
F	Low	11	40	42	21	23	48
F	Regular	9	64	66	43	41	71
F	Low	8	49	58	50	40	67
F	Low	10	58	44	28	37	59
F	Low	12	64	52	28	34	62
F	Low	12	44	36	23	26	49
F	Regular	8	65	58	47	43	71
M	Low	12	34	28	20	20	42
M	Regular	8	57	69	49	39	71
M	Low	10	54	68	37	35	66
M	Low	11	41	44	29	28	53
	?±SD	10.2±1.5	52.5±10.0	55.5±15.3	36.7±11,2	33.2±6.8	61.8±9.8

Source: Primary (2015)

The data divided by gender, the average male in the score reaches 62.5 and the female reaches 61. For individual tests the best average is alternated between genders. On the balance beam the women's race performance was 54.9 against 50.9 males. For the evaluation of male individuals monopedal jump obtained better results, reaching 59.6, and females reached 50.9. In the evaluation of side jumps boys achieved a score of 38.8 and the girls 34.3. At the last evaluation, platform transfer, the scores were 34.9 for females and 31.8 for males (Table 02). Gorla (2004) when applying KTK intellectually the disabled, showed that male volunteers showed superior ability to coordinate compared to females.

According to Winnick (1995) the performance of the male is generally higher than female subject due to strength, it is also stated that there is an exception as flexibility and balance, which may establish a lower performance of the male sample in tests that require balance with the beam and the platform transfer. The sample also showed a higher deficit on tests of lateral jumps and platform transfer, this may be related to proof not only of strength or balance, but be continuity execution, in which greater difficulty for students to keep pace for best results were identified. All data were statistically analyzed with t-test, but there was no significant statistical differences for the tests by gender, what comes in contrast to data published by Vasconcelos (1991) that when it refers to significant differences between children with Down syndrome mentions it happens from 13 years of age.

Table 02 - Evidence Medias by Genre

	Male n=8 ?±SD	Female n=7 ?±SD	?(%)	*p*
QM Beam	50.4±9.7	54.9±10.4	4.5(8.2%)	0.4
QM Monopedal Jump	59.6±18.1	50.9±10.6	-8.7(-17.1%)	0.28
QM Side Jump	38.8±10.7	34.3±12	-4.5(-13.1%)	0.46
QM Platforms	31.8±6.1	37.9±7.7	6.1(16.1%)	0.4
Score	62.5±10.5	61±9.6	-1.5(-2.5%)	0.78

Source: Primary (2015) Note: p = test - t student ($p < 0.05$) , Δ (%) = Difference

The study also collected data on the practice of daily physical activity of the sample. When asked about the daily activities, the questionnaire responses divided the questions into three options: light activity, intense and inactive. The average of intense activity of the sample was 2.8 hours per week (168 minutes). As for the light activities, the results were lower, reaching a

weekly average of 1.6 hours (96 minutes) and for inactive, the sample had an average of 22.6 hours per week (1356 minutes). The percentage of activities was ranked 10, 6 and 84% respectively. The data show that inactivity of the sample is 513% higher than the light and intense activities added weekly. In a study by Pelozin et al. (2009), with children 9-11 years the relationship of physical activity with the coordination engine performance levels showed that the more the child was inactive, the lower your engine performance. In the present study only one sample showed a fair result for the KTK test, and their average of practiced inactive was higher when compared with the mean of the group.

When we relate the data of physical activity and motor performance calculated by motor coordination test we can see that a total of 12 students (80%) of the sample does not show a direct relationship of the activities with their performance. Within the study group, 3 subjects (20%) have a better test score KTK related to his intense weekly activity. Individuals 5, 9, 4 obtained in KTK 126, 178 and 199, and the weekly intense activity questionnaire presented respectively 3, 5.5, and 6.5 hours a week of intense activities (Table 03), thus demonstrating that for this group of 3 students, the semais activities may have influenced overall engine performance. Gorla (2004) quotes several authors who apply the KTK test and after the questionnaire and the test was able to conclude that systematic motor activities program contributes to an improvement in the basic conditions for the initial preparation of the intellectual disabled for their training.

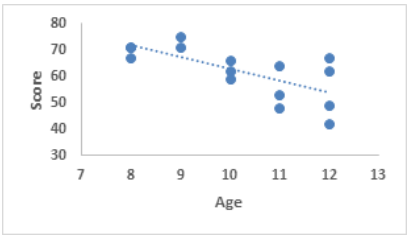
Table 03 - Relationship activity and general score

Specimen	Classification	Score	Intense Activity
1	Low	64	5
2	Regular	75	2.5
3	Low	62	1
4	Low	67	6.5
5	Low	48	3
6	Regular	71	3
7	Low	67	1.3
8	Low	59	2
9	Low	62	5.5
10	Low	49	2
11	Regular	71	1
12	Low	42	2
13	Regular	71	3
14	Low	66	3
15	Low	53	1

Source: Primary (2015)

According to the applied correlation test, there was a direct relationship between the age and the sample engine performance which generally shows a reduction of the total score in accordance with advancing age (Figure 01), which may be caused by the lack of interest in physical activities, perhaps not adapt to the activities or the activities provide competitive moments that create frustrations, causing the child stops doing the activity. Our study is aligned with the Saints and Monato (2002) when they state that the best results in their studies were obtained by younger individuals. But it runs counter to that found in the study by Martinek et al (1977) who claim that the age and the results are improving and that children 11 and 12 years gets better results than 7 years.

Figure 01 - Relation performance and age



Source: Primary (2015)

With the collected data we can see that there is a deficit in the large motor skills in children with Down syndrome, especially with increasing age. The individuals in the sample did not show satisfactory levels for the tests, insisting that the practice of physical activity improves development it is believed that this group in particular does not do enough diamonds or weekly activities to improve their coordination.

Conclusion

We sought to describe the engine performance levels of children with Down syndrome in the city of Joinville, of both sexes, between 8 and 12 years old, comparing the components of the KTK test between the sample and determining the degree of association between motor development and physical activity practiced.

The sample does not have normal performance, all people have regular or low levels. Analyzing the differences between the sexes, boys had higher levels than girls overall scores, maybe due to more active lifestyles of children who participate in activities that enable faster development of motor skills. However, the girls performed better on tests that require balance. When analyzed by Student's t-test the samples showed no significant difference. It was evident also that the sample have no better engine performance levels as increasing age, which may be the result of a lack of interest in physical activities or even for the execution of KTK. It was noted also that in tests that require coordination for continued implementation, students of the sample did not obtain comparable results with those which required strength or balance, but which they were executed with interrupts.

The greatest difficulty for the study was the achievement of KTK data along with a compatible sample. Many responsible not authorize intervention and many report that would not like to see their children participating in studies or tests. Given the necessary explanations for what it is the study, some charge only end up understanding the real reason the study.

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EDILSON FERNANDO DE BORBA. Endereço: RUA NILSON JOÃO RAULINO, 80, AP403, BLOCO19
Bairro: JOÃO COSTA Cidade: JOINVILLE. Estado: SC. País: BRASIL. CEP: 89209175.

THE PRACTICE OF PHYSICAL ACTIVITY AND ITS RELATIONSHIP WITH THE MOTOR COORDINATION LEVEL IN CHILDREN WITH DOWN SYNDROME

ABSTRACT

The motor development in childhood, characterized by the acquisition of motor skills, which nurture a body area. These skills are required in the daily life of the child, thus the present study aimed to evaluate the performance level of large motor skills in children with Down Syndrome between 8 and 12 years old and their relationship with physical activity. The sample consisted of 15 students with ± 10.2 years old, including 8 boys and 7 girls from Mãe D'água's project of the city of Joinville-SC. The children motor performance was measured by KTK (GORLA, 2007) test battery and questionnaire of weekly physical activities. Statistical analysis was performed using Student's T-Test. In general the results of the study revealed that 73.3% of the sample showed a poor performance. As for the motor performance components coordinated, it was found that girls showed more difficulties in lateral jumps and monopedal than boys, who had lower levels of balance. Physical activity did not show significant results of a better motor performance in individuals of this sample and advancing age has generated a decrease in motor coordination levels of the sample.

KEYWORDS: Down syndrome, physical activity, motor performance.

LA PRATIQUE DE L'ACTIVITÉ PHYSIQUE ET SA RELATION AVEC LA COORDINATION NIVEAU MOTEUR CHEZ LES ENFANTS ATTEINTS DU SYNDROME DE DOWN

RÉSUMÉ

Le développement moteur, pendant l'enfance, est caractérisé par l'acquisition des habilitées motrices, qui donnent l'opportunité de dominer le corps. Ces habilités sont requises dans la vie quotidienne de l'enfant, de cette façon cet étude a eu l'objectif général d'évaluer le niveau de performance de la coordination motrice large en enfants avec le Syndrome de Down entre 8 et 12 ans et la relation avec l'activité physique. L'échantillon a été composé de 15 enfants avec ± 10.2 ans, étant 8 garçons et 7 filles du projet Mére d'Eau de la ville de Joinville – SC. La performance motrice des enfants a été mesuré par la batterie du test KTK (GORLA, 2007) et le questionnaire d'activités physiques hebdomadaires. Pour l'analyse statistique a été utilisé le test t de Student. En général les résultats de l'étude ont démontré que 73.3 % de l'échantillon étudié a présenté baisse performance. Concernant les composants de la performance motrice coordonnée, on a constate que les filles ont démontré plus difficulté pour exécuter les sautes latérales et mono pédale que les garçons, qui ont présenté des niveaux inférieurs d'équilibre. L'activité

physique n'a pas présenté résultés significatifs pour améliorer la performance motrice des individus de cet échantillon et l'avancement de l'âge a géré une diminution des niveaux de coordination motrice de l'échantillon.

MOTS-CLÉS: Syndrome de Down, l'activité Physique, Les Performances Moteur

LA PRÁCTICA DE LA ACTIVIDAD FÍSICA Y SU RELACIÓN CON LA COORDINACIÓN DE NIVEL MOTOR EN NIÑOS CON SÍNDROME DE DOWN

RESUMEN

El desarrollo motor en la infancia, que se caracteriza por la adquisición de habilidades que consolide un área del cuerpo del motor. Estas habilidades son necesarias en la vida diaria del niño, por lo tanto, este estudio tuvo como objetivo evaluar el nivel de rendimiento de las habilidades motoras en los niños con síndrome de Down entre los 8 y 12 años y su relación con la actividad física. La muestra estuvo conformada por 15 estudiantes con ± 10,2 años, y 8 niños y 7 niñas de la ciudad Diseño Mãe D'agua de Joinville-SC. El rendimiento del motor de los niños se midió por el KTK (GORLA, 2007) batería de pruebas y el cuestionario de actividad física semanal. Análisis estadístico se realizó mediante la prueba t de Student. En general, los resultados del estudio revelaron que 73,3% de la muestra mostró un pobre rendimiento. En cuanto a los componentes de rendimiento de la coordinación motora se encontró que las niñas mostraron más dificultades en saltos laterales y monopédica que los niños, que mostró menores niveles de equilibrio. La actividad física no mostró resultados significativos para un mejor rendimiento del motor en individuos de esta muestra y la edad avanzada ha generado una disminución en los niveles de muestra motor de coordinación.

PALABRAS CLAVE: Síndrome de Down, La Actividad Física, El Rendimiento Motor.

A PRÁTICA DA ATIVIDADE FÍSICA E SUA RELAÇÃO COM O NÍVEL DE COORDENAÇÃO MOTORA EM CRIANÇAS COM SINDROME DE DOWN

RESUMO

O desenvolvimento motor, na infância, caracteriza-se pela aquisição de habilidades motoras, que oportunizam um domínio do corpo. Essas habilidades são requisitadas na vida diária da criança, sendo assim o presente estudo teve como objetivo geral avaliar o nível de desempenho da coordenação motora ampla em crianças com Síndrome de Down entre 8 e 12 anos e a sua relação com a atividade física. A amostra foi composta por 15 alunos com ± 10,2 anos, sendo 8 meninos e 7 meninas do Projeto Mãe D'agua da cidade de Joinville-SC. O desempenho motor das crianças foi mensurado através da bateria do teste KTK (GORLA, 2007) e questionário de atividades físicas semanais. Para análise estatística foi utilizado test-t de student. De modo geral os resultados do estudo revelaram que 73,3% da amostra estudada apresentou desempenho baixo. Quanto aos componentes do desempenho motor coordenado constatou-se que as meninas demonstraram mais dificuldades nos saltos lateral e monopedal do que os meninos, que apresentaram níveis inferiores de equilíbrio. A atividade física não apresentou resultados significativos para um melhor desempenho motor nos indivíduos dessa amostra e o avanço da idade gerou uma diminuição dos níveis de coordenação motora da amostra.

PALAVRAS-CHAVE: Síndrome de Down, Atividade Física, Desempenho motor.