# 156 - FLEXIBILITY INDICES IN CHILDREN WITH DOWN SYNDROME

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INTRODUCTION:

Nowadays, a scientific evolution in the Physical Education is observed, in special in the adapted Physical Education, which comes providing aid in the accompaniment of deficient so that they are respected and it does not have differences in the social context. The adapted Physical Education has as objective of study the motricity human being for the people with educative necessities special, adjusting methodologies of education for the attendance to the characteristics of each carrier of deficiency, respecting its individual differences (Duarte; Werner, 1995). The Down Syndrome (SD) is essentially a delay of the development, as much of the motor functions of the body, as of the mental functions. Karlan; Sadok (1990) cites that it is part of the group of not-gradual encefalopathies, that are located in the brain and constitute a set of clinical pictures with varied pathological symptoms, in the mental aspects and motor. The SD presents many characteristics, as: generally moderate mental deficiency, inclination of eyelids, face flattened in the nasal back and to maxilar, small ears, small teeth, language protusa, speaks delayed, buccal, low muscle tonus, hiperextensibility joint, ligaments, small feet, looseness of 1ª and 2ª cervical vertebrae, little coordination of the movements, amongst others. Due to lassity ligamentar and hiperextensibility joint, beyond the low muscle tonus, the SD carriers can present when comparative greater in general flexibility to the population, since these structures are considered restritctives of the range of motion (Alter, 1999). As cited for Araújo (2005), he has a trend for hiperflexibility in children with the SD when compared with the normal children of the same age. Flexibility, defined as " physical quality responsible for the voluntary performance of a movement of maximum angular range of motion, for a joint or set of joints, inside of the morphologic limits, without risks to provoke injuries" (Dantas, 1999), is a component of the related fitness to the health (ACSM, 1998); however, extreme levels of flexibility are not recommended for the population in general, having itself to prescribe exercises of functional stretches (Achour Junior, 2004). Moreover, extreme range of motion (ROM) in a joint increases the risk of injuries (Alter, 1999), especially if this structure to present little force of sustentation (Achour Junior, 2004). It is interesting, therefore, to verify the ROM of individuals with SD and to compare with ADM in said people normal, therefore for the flexibility health extreme they are not recommended (Araújo, 2005).

OBJECTIVES OF THE STUDY:

To investigate the flexibility level of children with Down Syndrome.

To compare the degree of flexibility of carrying children of Down Syndrome, with said children normal, with ages between 5 the 7 years.

METHODOLOGY:

This research was characterized as descriptive of case it has controlled, being selected 12 children, with ages between 5 the 7 years, that frequented an assistance institution for devoid children, in the north zone of the city of Rio De Janeiro. The election was intentional, forming 2 groups: group 1 (SD), constituted of 6 carrying children of Syndrome of Down and group 2 (CN), formed for 6 normal, or either, apparently healthful said children. None of the children carried through organized physical activities, only participating of artistic activities and psychological accompaniment, in the place where the measurements was realized. The responsible ones for the participants had agreed to signing a term of assented participation, respecting the norms established for the accomplishment of research in human beings, Resolution 196/96, of the National Advice of Health, 10/10/1996 (Brazil, 1996). To verify the flexibility indices, the flexitest, considered for Pavel and Araújo (1980), was applied, verifying it passive range of motion in 20 movements. The measurements had been carried through in 2 sessions (1 for each group) of 2 hours each, from the 9:00 h, without heating. The treatment of the data included the techniques of the descriptive statistics, with tables of frequencies and following the recommendations of Araújo (2005), it was used statistical median (to indicate the central trend) and the standard deviation (to indicate the variability), through which, became fullfilled it presentation of the results. For comparison of the results between the groups, the inferential statistics it was adopted, using the test Qui-square of Pearson, that compared the average values of the experimental variable, observing a level of significance $p<0,05$.

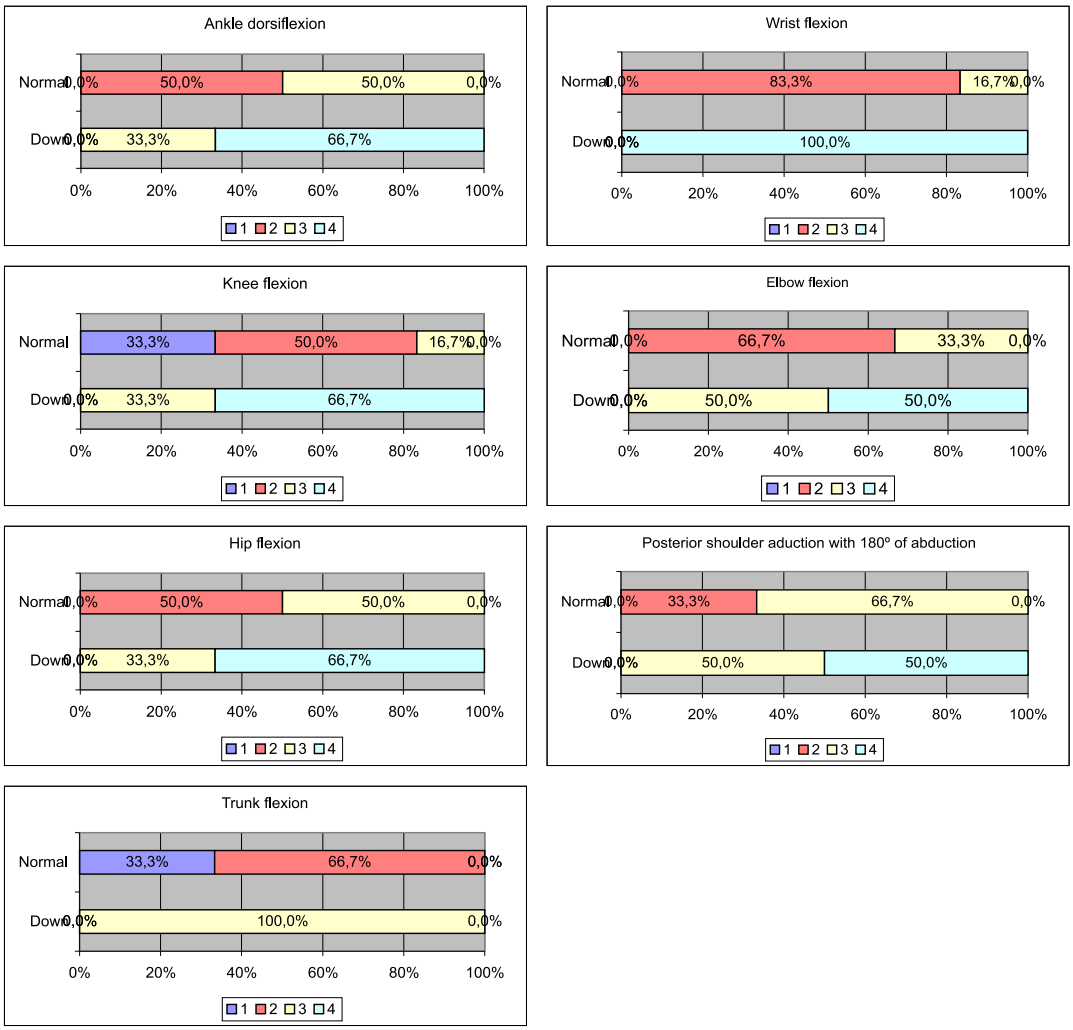
RESULTS:

For demonstration of the gotten results, had been chosen aleatorially 7 movements, in accordance with the subdivision proposal for Araújo (2005). Figures with horizontal bars present the percentile values of each group. As index 0 was not attributed in both the groups, the graphs point the percentage of indices between 1 and 4. In accordance with Araújo (2005), punctuation 2 tends to be most frequent, indicating average flexibility; extremities as 0 and 4 are rare, in if treating to the population in general, representing very small and very great flexibility, respectively. In table 1, to the central trend and the variability are demonstrated, in both the groups.

Table 1: Flexindex of 20 movements of groups SD and CN

| | SD group | CN group |
|---|---|---|
| Statistical median | 69* | 39* |
| Standard deviation | 6,15 | 7,78 |

In the flexindex table, values > 60 indicate range of motion "very great", while values between 31 the 40 point with respect to average flexibility (-). The value obtained demonstrated significantly superior flexibility in SD group ($p<0,05$).




Only in movement XVI, demonstrated in the figure above, were not found significant superiority in the flexibility indices of the SD. In general way, the said children normal had presented average values around 2, while the children with Down Syndrome had gotten indices between 3 and 4, indicating hiperflexibility; these results go to the meeting of referring literature to the characteristics of this special population (Sanvito, 1997). The hiperflexibility implies in lassity of one or more joints, having extreme extension of the components of the muscle system, and looseness of the ligaments, increasing the risk of traumas in joints (Alter, 1999). As cited for Achour Junior (2004), flexibility extremities do not have relation with the health, being important to fortify the structures muscle and joints of individuals with this characteristic, to guarantee greater stability. Being thus, the professionals who exert or want to come to exert a work with SD carriers, must take in consideration the characteristics of lassity ligamentar, hipermobility joints and low muscle tonus, therefore the SD carriers present greaters risks of injury for having minor stability in these structures. Strength exercises are indicated to thus confer stability to the joints, strengthening the unit muscle-tendon and reducing the risks of traumas and providing one better health.

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**FLEXIBILITY IN CHILDREN WITH DOWN SYNDROME**

Introduction: moderate flexibility presents relation with the health, however extreme of range of motion they are not recommended for the population in general for the instability risk in muscle and joints. The hiperflexibility can be related, in accordance with literature, to the pathologies as the Down Syndrome (SD). Objective: this study it compared the indices of flexibility of carrying children of Down Syndrome, with said children normal. Method: this research was of the descriptive type of case has controlled, being carried through with 12 children between 5 and 7 years of age, subdivided in 2 groups: group 1 (SD), composition for 6 children of both sex, carriers of Down Syndrome; e group 2 (CN), with 6 said children normal, also of both sex. The measurements had been carried through the composed flexitest for 20 movements, in the period of the morning, without previous accomplishment of heating. Results: in 19 movements, being exception the movement of posterior shoulder aduction with 180° of abduction, group SD presented superior flexibility ($p<0,05$) in relation to the said children normal. Conclusion: in this study, hiperflexibility in group SD was verified, what it goes to the meeting of literature. One sends regards that the professionals of Physical Education develop a specific work for this population, leading in consideration its morphologic and physiological characteristics.

Word-key: flexibility, child, hiperflexibility, Down Syndrome.

**FLEXIBILITÉ CHEZ LES ENFANTS AVEC VERS LE BAS SYNDROME**

Introduction: la flexibilité modérée présente la relation avec la santé, toutefois l'extrémité de la gamme du mouvement ils ne sont pas recommandées à la population en général pour le risque d'instabilité dans le muscle et les joints. Le hiperflexibility peut être connexe, selon la littérature, aux pathologies comme vers le bas syndrome (écart-type). Objectif: cette étude il a comparé les index de la flexibilité des enfants portants vers le bas du syndrome, à lesdits enfants normaux. Méthode: cette recherche était du type descriptif de cas a commandé, étant exécuté avec 12 enfants entre 5 et 7 ans, subdivisés dans 2 groupes: groupez 1 (écart-type), composition pour 6 enfants des les deux le sexe, porteurs vers le bas de syndrome; groupe 2 (CN) de e, avec 6 a dit la normale d'enfants, aussi des les deux sexe. Les mesures avaient été portées par le flexitest composé pour 20 mouvements, dans la période du matin, sans accomplissement précédent du chauffage. Résultats: dans 19 mouvements, être exception le mouvement de l'aduction postérieur d'épaule avec 180° de l'abduction, écart-type de groupe a présenté la flexibilité supérieure ($p<0,05$) par rapport à lesdits enfants normaux. Conclusion: dans cette étude, le hiperflexibility dans l'écart-type de groupe a été vérifié, ce qu'il va à la réunion de la littérature. On envoie le respect que les professionnels de l'éducation physique développent un travail spécifique à cette population, menant dans la considération ses caractéristiques morphologiques et physiologiques.

Mot-clef: flexibilité, enfant, hiperflexibility, vers le bas syndrome.

**FLEXIBILIDAD EN NIÑOS CON ABAJO SÍNDROME**

Introducción: la flexibilidad moderada presenta la relación con la salud, no obstante el extremo de la gama del movimiento ellos no se recomienda para la población en el general para el riesgo de la inestabilidad en músculo y empalmes. El hiperflexibilidad puede ser relacionado, de acuerdo con la literatura, a las patologías como abajo el síndrome (SD). Objetivo: este estudio comparó los índices de la flexibilidad de niños que llevaban abajo del síndrome, con los niños dichos normales. Método: esta investigación estaba del tipo descriptivo de caso ha controlado, siendo llevado a través con 12 niños entre 5 y 7 años de la edad, subdivididos en 2 grupos: agrupe 1 (SD), composición para 6 niños de ambos el sexo, portadores abajo del síndrome; grupo 2 (CN) de e, con 6 dijo normal de los niños, también de ambos sexo. Las medidas habían sido llevadas con el flexitest compuesta para 20 movimientos, en el período de la mañana, sin la realización anterior de la calefacción. Resultados: en 19 movimientos, el ser excepción el movimiento del aducción posterior del hombro con 180° de la abducción, grupo SD presentó la flexibilidad superior ($p<0,05$) en lo referente a los niños dichos normales. Conclusión: en este estudio, el hiperflexibilidad en el grupo SD fue verificado, qué va a la reunión de la literatura. Uno envía respeto que los profesionales de la educación física desarrollan un trabajo específico para esta población, conduciendo en la consideración sus características morfológicas y fisiológicas.

Palabra-llave: flexibilidad, niño, hiperflexibilidad, abajo síndrome.

**ÍNDICES DE FLEXIBILIDADE EM CRIANÇAS PORTADORAS DE SÍNDROME DE DOWN**

**RESUMO**:

Flexibilidade moderada apresenta relação com a saúde, porém extremos de amplitude de movimento não são recomendados para a população em geral pelo risco de instabilidade músculo-articular. A hiperflexibilidade pode ser relacionada, de acordo com a literatura, à patologias como a Síndrome de Down (SD). Objetivo: este estudo comparou os índices de flexibilidade de crianças portadoras de Síndrome de Down, com crianças ditas normais. Método: esta pesquisa foi do tipo descritiva de caso controle, sendo realizada com 12 crianças entre 5 e 7 anos de idade, sub-divididas em 2 grupos: grupo 1 (SD), composto por 6 crianças de ambos os sexos, portadoras de Síndrome de Down; e grupo 2 (CN), com 6 crianças ditas normais, também de ambos os sexos. As mensurações foram realizadas através do flexiteste composto por 20 movimentos articulares, no período da manhã, sem realização prévia de aquecimento. Resultados: em 19 movimentos, sendo exceção o movimento de adução posterior do ombro com 180 de abdução, o grupo SD apresentou flexibilidade superior ($p<0,05$) em relação às crianças ditas normais. Conclusão: neste estudo, foi verificada hiperflexibilidade no grupo SD, o que vai ao encontro da literatura. Recomenda-se que os profissionais de Educação Física desenvolvam um trabalho específico para essa população, levando em consideração suas características morfológicas e fisiológicas.

**Palavras-chave**: flexibilidade, criança, hiperflexibilidade, Síndrome de Down.