

POOR POSTURE IN YOUNG FOOTBALLERS AGED 11 TO 13

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Abstract

The article focuses on the poor posture and mobility of the spine in children and subsequent use of exercises aimed at strengthening muscle corset in the treatment of this diagnosis system in remedial gymnastics. The goal of the contribution is to determine the effectiveness of therapeutic exercises aimed at the increase of muscular corset muscles in the treatment of poor posture in children. The goal of paper is also to identify and describe the occurrence of bad posture in the sample of participants and determine range of motion of the spine. The survey sample consisted of 19 boys aged from 11 to 13 years, who are pupils of Football Class 6 C, at the elementary school in Trenčín. The survey consisted of non-standardized questionnaire of our own design. The survey shows that the high percentage of children (68.42% of our respondents) complains of poor posture. The survey also shows that the regular exercises focused on strengthening muscle corset for three months at an output tests positively affected poor posture of children (57.89%), and there was also proven the improvement in spinal mobility.

Key words: functional postural disorders, muscle imbalance, poor posture, therapeutic physical education

1 Good Posture

Good posture is according to Lomnička and Jaroš defined as following: Through the peak of kyphosis there runs the plumb line from the back of the head, where it further proceeds in intergluteal way and ends between the calcaneus. The deepest point of cervical lordosis is not remote from the plumb line more than 2 cm, and the peak of lumbar lordosis is remote from the plumb line no more than 3 cm. Abdominal wall is located behind frontal plane (coronal plane) which is made of processus xiphoideus. During the rest and during movement there are, with the help of proper centration of the joints and joint receptors, supplied correct information, while pain as a high sign, is not present [1].

2 Poor Posture

Wrong posture is defined as the one, where there are deviations from good posture, sagittal or axial deviation that are not caused by structural malfunctions. In poor posture there may be present functional disorders of the spine, that can be accommodated (improved) by active volitional efforts, even if only temporarily and with endeavour, unlike orthopaedic disorders and real deformities that are not corrigible and belong to the competences of medicine doctors [2, 3]. Čermák et al. claim that in poor posture there is present the disorder of postural function and for that reason it belongs to malfunctions of musculoskeletal system [4].

The most frequent functional postural disorders are: increased cervical lordosis, or enlarged neck deflection, increased chest bending or thoracic kyphosis, round back, protruding shoulder blades, flat chest, enlarged bending of lumbar part, enlarged kyphosis of sacral bone, associated with bulging abdomen, reduced curvature of the spine, scoliosis, increased lumbar lordosis, uneven development of limbs due to uneven loading of muscles, flat feet, knees turned in, outward, and buckled knees, affected by the unequal muscle burden. The most frequent poor posture in children and teenagers is characterised by weak muscles and connective tissue laxity. In standing posture there is manifested mainly by pelvic anteversion, increased lumbar lordosis, increased thoracic kyphosis, shoulder blade protrudes that appear wing-like, the forward head posture and protruding legs, which are mainly in re-treatment [5].

The posture is already shaped after the birth. From the position "C" in which a child is laid in the womb (if an unborn baby is in the breech position – feet down position in the uterus), the birth can quickly modify the shape of the spine which is caused by observing the shape of the surface on which the child is imbedded. There consequently occurs cervical lordosis, caused by rising the head in the prone position. Then there begins formation (shaping) of thoracic kyphosis by correct sitting posture, while lumbar lordosis is formed by means of walking. From the beginning the gait is unstable with a broad base. Gradually the subsequent loss of subcutaneous fat and decrease of physiological muscle tension can affect the body physiologically in a variety of ways, for example can contribute to poor posture. During the growth there occurs a number of diseases that are based on anatomical-pathological processes and lead to poor posture. The most frequent diseases are scoliosis and Scheuermann's disease [6, 2,].

With the orientation forming, between 4 and 8 weeks after the birth, a child starts to implement the programme of automatic body maintenance position. Gradually there occurs tonic muscle release and e phasic muscles release is engaged (extensors, abductors and external rotators), especially the ones involved in the upright posture. As an optimum is considered the completion of child's development within the age of three months when the child reaches the balanced involvement of agonists and antagonists. Unless this so called three-month model was not completed, all muscle groups of the body have unevenly distributed tension, they also have improper position of the articular surfaces as well as of entire body segments. This non-ideal model usually complies with the characteristics of postural disorders in children, such as poor posture, muscle imbalance, the pain syndromes: layer syndrome, upper-crossed and lower-crossed syndrome [7].

Posture of a human being starts to be formed during school age. In this period it is important to devote our attention to the correct habits: correct sitting posture at school and at home, correct and healthy way of carrying bags, mutual burden of the upper limbs during sport and games, or when working. In girls there is often formed poor posture during the development of secondary sexual organs [8].

At present days, there is seen, in all age groups, the declining physical activity, which is also unevenly distributed during the day and children miss physical and locomotor diversity. Children also spend the majority of the day in postural unfavourable sitting posture and this fact causes overload of the same muscle groups and joint structures. Insufficient movement activity offers the deficiency of information to central nervous system and that, together with other factors, result in incorrect movement patterns and muscle imbalance [9].

The posture is affected and modified both by internal and external factors. Posture is characteristic for each human being but it is not constant. One of the risks for a spine, is poor posture, lifting or carrying heavy burdens, stress and mental tension that can be displayed by the pressure in trapezius muscles in cervical spine [10].

The clinical picture of poor posture is quite mixed one and can be divided in several groups. *Flat back* (dorsum planum) – is characterized by physiological curvature of the spine, it is flattened with straightening thoracic and lumbar spine, forward head posture, pelvic retroversion, extension in hip and knee joints, weak muscles of torso, weakened hip flexors and shortened hamstrings [3].

Poor posture is characterised with overall lower muscle tension with emphasised physiological spine curvature disorders, forward head posture, pelvic retroversion, hyperextension of the hip and knee joints, slight cervical spine extension, kyphotic curve extension and the flattened bottom of lumbar spine. Typical is the difference between upright posture and the posture during inactivity and rest, that results in insufficient endurance in active posture and back pain during long time of standing straight [3, 8, 9].

Hyperkyphosis in the thoracic spine (humpback or round back) – it is the impaired statics of upper torso, with the occurrence of forward head posture, the hyperlordosis of cervical spine,

overload of cranial and cervicothoracic transition, weakened interscapular muscle (scapular winging), shortened pectoral muscle and shoulder protraction [3, 6, 7].

Hyperlordosis lumbar spine – is clinical extension of bending in lumbar spine, with typical pelvic anteversion, hip flexion in the joints, slight hyperextension in knee joints and weakened abdominal muscles, with the head in neutral position, and finally cervical and thoracic spine curve is a natural. Thus there occur changes of dynamic and static conditions in the pelvis and lower lumbar region. When walking there is evident the lack of extension in hip joints, which further which then intensifies pelvic anteversion and overloads the LS segment [4-6].

Kyfolordotic posture is characterised by forward head posture, pelvic anteversion, flexion in the hip joints, mild hyperextension in the knee joints, shortened flexors of hip joints and weakened abdominal, spinal and neck muscles. This is the combination of hyperlordosis and hyperkiphosis, and it reminds poor posture. However the difference is in the spinal curve which remains extensively bent during active straightening [4, 8].

Skoliotic posture is spinal deviation in the frontal plane, which is of functional nature and it is possible to straighten it in active muscle effort. The root of scoliosis can be one-sided overloading the spine or unilateral wrong habits or sideward pelvic position as the result of unequal length of the lower extremities [7]. Doubosset in Habelle et al. [5] defines scoliotic deformity as the series of vertebral segments placed in extension, or lordosis, which deflect and axially rotate towards the same side. According to the author, idiopathic scoliosis represents the combination of torsional regions joined by junctional zones.

3 Survey Methods and Techniques

New knowledge, information and data were obtained via the prime method of enquiry in science, the experiment. The experiment was conducted at the elementary school in Trenčín, by 6-graders (pupils of the class 6th C). From the overall number of participants (20 pupils), 19 pupils participated in the survey (96.2%).

The experiment consisted of the training unit designed to increase muscular corset muscles and of questionnaire survey which was conducted by non-standardised questionnaire of own construction. To collect the data, the questionnaire contained 6 questions, 5 closed-ended and 1 open-ended. Closed-ended questions were dichotomous. From overall number of distributed questionnaires, 19 were returned (100% recoverability).

4 Analysis and Interpretation of Survey Results

In the following tables and graphs we processed the data from individual questionnaire items that were distributed to the respondents in output investigation.

Table 1 *The Perception of Back Pain*

Perception of Back Pain	n	%
Yes	6	31.58
No	13	68.42
Total	19	100.00

To our question whether the respondents perceived or perceive back pain responded 6 pupils (31.58%). The 13 pupils (68.42%) responded that they have not perceived back pain until now.

Table 2 *Poor Posture Diagnosed*

Poor Posture Diagnosed	n	%
Yes	4	78.95
No	15	21.05
Total	19	100.00

To our question whether the respondents were diagnosed poor posture by their physiotherapist, 4 pupils (78.95%) said yes and 15 pupils (21.05%) claimed that they were not diagnosed with poor posture.

Table 3 Visit a Physiotherapist because of Poor Posture

Visit a physiotherapist	n	%
Yes	1	5.26
No	18	94.74
Total	19	100.00

To our question whether the respondents sometimes visited a physiotherapist for the reason of poor posture, one pupil (5.26%) responded, however 18 pupils (94.74%) claimed they have not visited a physiotherapist because of poor posture.

Table 4 Exercises of the Training Unit except from Physical Education Classes

Exercises except from P.E. classes	n	%
Did not exercise	5	26.32
Exercised once a week	1	5.26
Exercised twice a week	6	31.58
Exercised thrice a week	3	15.79
Exercised four times a week	3	15.79
Exercised six times a week	1	5.26
Total	19	100.00

To our question whether the respondents exercised the training unit aimed at poor posture except from the classes of Physical Education (P.E.), 5 pupils (26.32%) claimed that they did not exercise the training unit and 14 pupils (73.68 %) said they exercised the training unit aimed at poor posture except for P.E. classes. One pupil out of them (5.26%) claimed he exercised once a week, 6 pupils (31.58%) exercised twice a week, 3 pupils (15.79%) exercised thrice a week, 3 pupils (15.79%) four times a week and one pupil (5.26%) exercised these activities six times a week except for P.E. classes.

Table 5 The Improvement of Training Unit Performance

Improvement after Training the Activities	n	%
Yes	18	94.74
No	1	5.26
Total	19	100.00

To our question whether the respondents think the training unit focused on poor posture has helped them, 18 pupils (94.74%) claimed that they believe the exercises had a positive impact on their posture. Only one pupil (5.26%) said that the exercises didn't help him.

5 Conclusions

Hypokinetic conditions that are connected with sedentary way of life are typical for present-day children, who at the same time spend the majority of the day in physiologically unfavourable posture. That results in back pain and in poor posture. Thus we decided to focus our experiment on therapeutic physical education for children with bad posture.

From the total number of 19 pupils, who were our survey sample, aged from 11 to 13 years, 68.42% had poor posture during pre-test. After the intervention of physical exercise and training aimed to improve the posture for the period of 3 months, the occurrence of poor posture was found in 57.89% pupils. There was also achieved the improvement of spine mobility and 94.73% of boys claimed in the questionnaire, that they believe their back problems improved after the intervention. Thus we can conclude the paper that particular training unit aimed at the

increase of muscular corset muscles, positively affected poor posture in 11-13 year old boys, young football players.

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