

**107 - VALIDATION OF QUESTIONNAIRE AND PROTOCOL FOR SCHOOL POSTURAL SCREENING**

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**INTRODUCTION**

The validation of both the postural habits assessment questionnaire and the postural screening protocol comes to meet a need for health practitioners (Physical Therapists and Physical Education) acting in school to early identify the postural changes in children and teenagers in a simple and effective way.

It is not common parents or guardians to take their children to be pro-actively consulted as prevention of postural problems. A considerable number of them even notice any deviations in the posture of their children. When in their initial phase, these posture variations do not cause clinical symptoms but may worsen over time and become the cause of back pain in adulthood and, therefore, need to be treated (Knoplich, 2008).

Spine diseases are considered a serious public health problem due to the high incidence in the population, disabling many individuals temporarily or permanently to their professional activities and an active social life (Erlach, 2003). The Pan American Health Organization has identified back pain as one of the 3 major occupational diseases to be monitored by the WHO in the Americas (PUNNETT et al, 2005). In Brazil, according to the INSS (2007), the back problems are the leading cause of disability pensions.

Studies such as Harreby et al, 1996; Mirovsky et al, (2002 apud FERNANDES, 2007) identified the postural changes in childhood and adolescence as factors that predispose to diseases of the spine in adulthood and ended up motivating epidemiological studies of prevalence of pain back in school. Even being not uniform with respect to age, the results of these studies justify the development of programs aimed at preventing postural deviations and back pain in young people. These programs take into account the biomechanics of the spine and the influence that lifestyle has on body posture in children and adolescents (FERNANDES, 2007). By acting in preventive and educational plans, these actions would promote the adoption of habits and attitudes that preserve the health of the spine (BRACCIALLI; VILARTA, 2000).

In the line of prevention, the Brazilian Ministry of Health (2002) states that the school period is key to work in the perspective of health promotion. Children and young people are living moments when habits and attitudes are being created or revisited. According to the Brazilian school census of 2000 there were 345,527 students in the country, 221,852 in elementary school, at ages privileged to the formation of values and habits conducive to health (Zapata et al, 2004).

**TOOLS AND METHODS**

Due to the nature of this work, the method adopted for the preparation of the questionnaire to assess postural habits (QIHP) as Annex 1, and the school postural screening protocol (PTPE) as Annex 2, was the research on books, papers, theses and other sources in the fields of knowledge related to the theme, such as Anatomy, Physical Therapy, Education, Public Health and Ergonomics, among others.

During the development of QIHP, the following stages were considered: (1) defining the ultimate goal of QIHP in the context of an education program and school postural assessment; (2) review of scientific literature to identify habits and attitudes associated with the onset of postural deviations in children and adolescents, and (3) preparation of a number of questions based on themes identified in the literature review, such as bone maturation of children and adolescents, the lack or excess of physical activity; postural habits associated to modern lifestyle, the incidence of back pain in this age group and the impact of backpack use by children.

QIHP main goal is to identify habits and activities common among children and adolescents that may be associated with the presence of meaningful postural deviations. The result of the questionnaires data analysis will be used to direct the content of the awareness and educational activities on the bad habits and their effects on health for the students and their families

The development of PTPE was based on postural screening protocols in use by public schools in Texas and Massachusetts in the United States of America (Massachusetts Department of Public Health, 1996). In addition, we considered the method of analysis of postural Portland State University (PSU), adapted from the New York Posture Test by Althoff, Heyden and Robertson (1988). Concepts of postural assessment from authors seeking a markedly asymmetric pattern ideal posture were also considered. For Kendall (1995) plumb line is used to determine whether the reference points of the person being evaluated are in alignment with the corresponding items in the standard posture. Deviations from the alignment are described as mild, moderate or marked. Bricot (2001) states that the imbalance of the shoulder girdle is connected to laterality. Usually on the right-handed individuals the left shoulder is the highest in the left-handed people the opposite is true, exceptions correspond to disturbances of laterality. Magee (2005) establishes classically that the ideal postural alignment (viewed from the side) is defined as a straight line (from gravity) that passes through the earlobe, the bodies of cervical vertebrae, the tip of the shoulder, chest midline, through the bodies of the lumbar vertebrae, slightly posterior to the hip joint, slightly anterior to the axis of the knee joint and immediately prior to the lateral malleolus.

Santos (2001) states that the form shown for gibbosity or "hunch back" is important. For this author, this spinal deformity exists only when a convexity in one side of the body co-exists with a flattening in the other side. Verderi (2005) says that no matter what body plane we observe, it should be linked to the gravity line. The segments that are not aligned to the axis perpendicular to the ground will be unbalanced. Observing the frontal plane, Knoplich (2008) looks for an asymmetry in the triangle formed by the edges of the medium arm and forearm with the pelvic girdle as an indication of asymmetric pelvis.

The PTPE protocol is based on the visual search for signs of asymmetry, misalignment and / or abnormal posture. The student is observed in the standing position in 2 planes (coronal and sagittal) and also is asked to bend forward until his/her back is parallel to the floor. The screener then assigns values "1" and "0" respectively when an indicator is present or not. A total of 14 indicators for possible postural alterations (Table 1) are evaluated, and the following classification criteria have been adopted:

- ▶ For the student presenting a count of less than 10 indicators present, there is no indication for a detailed examination;
- ▶ For the student presenting a count of 10 or more indicators present, there is a recommendation for his/her parents to refer to a specialist for further examination.

Table 1 - Indicators of postural changes

Position / View	Indicator to be observed	Present (1) Absent (0) ?
<b>Front View</b>	Tilt Head	
	Height difference in the shoulders	
	Difference in Triangle of Thales	
	Height difference in the pelvis	
<b>Back View</b>	Tilt Head	
	Height difference in the shoulders	
	Winged Scapula	
	Presence of convexity	
<b>Side View</b>	Head projected forward	
	Shoulders hunch forward	
	Cervical hyperlordosis	
	Thoracic kyphosis	
	Lumbar hyperlordosis	
<b>Bend forward</b>	Gibbosity	

Source: Author

### DISCUSSION

For Kendall (1995), the high incidence of postural defects in adults is related to their tendency to a specialized or repetitive pattern of activity. Correction of existing conditions depends on understanding the root causes and implementation of positive measures and preventive education. By adding the outreach of the educational system to the aspects previously described by Barbosa et al (2006), we can consider the school a place conducive to the implementation of screening programs aimed at prevention of spine diseases. The validation of QHIP questionnaire and the PTP Protocol gains relevance as the success of screening programs depends on the use of effective tools and methodologies, as well as a low cost and ease of implementation.

The concept of screening apparently healthy populations to detect asymptomatic disease has been considered as a strategy to be adopted by public health systems (Flynn, 1991). Countries like the United States, Japan, Germany, Italy, Australia, among others, instituted screening programs for school deformities in the spine. Japan is the only country with postural screening program maintained by the federal government (LIMA, 2006). According to Grivas et al (2007), postural screening in school is mandatory in 21 USA states.

Holland, Stewart and Masseria (2006) defined the following guidelines for screening programs: the importance of the problem, the understanding of its natural history, the use of appropriate screening procedures that are accepted by the target population; reasonable operational costs and the availability of acceptable treatment for the disease. In this context, the limitations in existing protocols as the PSU, such as the dependence of the practical experience of the evaluator and the arbitrary allocation of the evaluation scores, are overridden by its relative simplicity, reduced application time and his role as effective screening strategy postural in the school environment (Lima, 2006).

While researching the existence of specific programs for school postural screening in Brazil, Lima (2006) found no literature information on the existence of such programs that receive government support in any one of government instance (city, state or federal). When this type of program is implemented in Brazilian schools, public or private, usually it starts from a voluntary initiative.

For Fernandes et al, (1997 apud LIMA, 2006) there are two trends driving techniques used for postural analysis: direct observation that was carried out using devices which enable the quantitative measurement of results; and subjective observation, which primarily relies on the observation made by the evaluators and, thus, depends primarily on the his/her experience, as is the case of the method Portland State University (PSU).

In his study, Lima (2006) had identified that occupational health care practitioners used postural screening protocols, including the New York and Postural Test Scoliometer (Resende, Sanches, 1992); the postural analysis method of postural Portland State University (AGUIAR, 1996; SIMAS Melo, 2000, Santos, MORO, 2005), and the 1 minute test (FERRIANI et al, 2000; BARROS, SOUZA, 2003)

### CONCLUSION

The existence of school postural screening programs in many countries, denotes its importance and effectiveness in terms of public health policy. The use of low cost tools and high effectiveness, combined with the ease of implementation are critical factors to the success this type of screening program. Considering their features, we believe that both the QHIP as the PETP could be used as a basis to a standard postural screening program in schools.

Postural screening can become the foundation for more comprehensive postural educational programs. With the active participation of families, school and government, a culture focused on prevention can be created. Community involvement could even lead to discussions on the true role of schools, their managers and teachers in health promotion of children and teenagers.

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## ANNEX 1

Model of Questionnaire for Identifying postural habits - (QIHP)

## 1. Personal Data

1.1 Name: \_\_\_\_\_

1.2 Class: \_\_\_\_\_ 1.3 Age: \_\_\_\_\_

1.4 Dominance: ( ) Right ( ) Left

## 2. Practice some physical activity outside of school?

( ) Yes ( ) No

2.1 If yes, what activities?

( ) Soccer ( ) Swimming ( ) Volleyball ( ) Basketball ( ) Ballet

Other: \_\_\_\_\_

2.2 How many times a week? \_\_\_\_\_

3. How many hours per day do you get in front of the TV? \_\_\_\_\_

3.1. Do you experience any pain when watching television?

( ) Yes what part of the body? \_\_\_\_\_

( ) No

4. How many hours per day do you use a computer? \_\_\_\_\_

4.1. Do you experience any pain when you are using the computer?

( ) Yes (In what part of the body? \_\_\_\_\_)

( ) No

5. Do you feel any pain when carrying your backpack?

( ) Yes (In what part of the body? \_\_\_\_\_)

( ) No

6. What type of backpack do you use backpack?

( ) rolling backpack ( ) standard backpack

7. How do you wear your backpack is:

( ) Both strips and low on back ( ) Both strips and high on back

( ) one strip, over just one shoulder

8. How do you feel your backpack weight is:

( ) Very heavy ( ) heavy ( ) light ( ) very light

## ANNEX 2

Model for Postural Screening Form

