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POSTURAL ASSESSMENT STUDY

Angry posture

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Summary Postural abnormalities can affect the emotions and vice-versa. The aim of the present study was to investigate the existence of a relationship between subjective anger and body posture in 28 women, aged between 20 and 39 years, with a normal body mass index (or underweight) and an absence of neurological, psychiatric or musculoskeletal disorders. The postural parameters photographed were the inclination of the shoulders, protrusion of the head, hyperextension of the knees and shoulder elevation. The degree of anger was rated by analogue scales representing current and usual anger. The results indicated that a relationship exists between current anger and the inclination of the shoulders ($p = 0.03$), protrusion of the head ($p = 0.05$) and hyperextension of the knees ($p = 0.05$). Correlations were found between usual anger, shoulder elevation ($p = 0.05$) and hyperextension of the knees ($p = 0.05$). In conclusion, posture is associated with emotions, and usual anger can lead to shoulder protraction.

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Introduction

According to the Oxford Thesaurus Dictionary (Hanks, 2009), anger, when considered a noun, is defined as rage, ire, fury, indignation, displeasure and even outrage. The verb to anger can mean to provoke, to enrage, “to raise one’s hackles” or “to make one’s blood boil”. This emotion

is related to the interpretation of having been offended, wronged or denied, with a tendency towards retaliation. Physical action as a response to the perceived provocation leads to increases in heart rate, blood pressure, and adrenalin and noradrenalin levels (Videbeck, 2006). This increase is also evident in the skeletal muscles in general. One such example is when the diaphragm increases the respiratory rate (Darwin, 1899; Garbossa et al., 2009).

It is important to remember that each emotion is the result of an integration of specific neurochemical and motor processes, as well as the fact that emotions can be considered as the primary motivational system in humans

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(Izard, 1991). Specific facial expressions and body language have been observed as physiological responses to the emotion anger (Ekman et al., 1983).

If anger affects the muscles and body language, there is a possibility that anger also affects posture, which refers to the alignment and maintenance of body segments in certain positions (Rosário et al., 2004). Some postural deviations may adversely affect muscular efficiency, predisposing individuals to pain and pathological musculoskeletal conditions and provoking unaesthetic alterations (Rosário et al., 2004; Liebenson, 2008; James et al., 2009; Wallden, 2009).

Based on a literature review, emotional alterations can, with proper stimulation, affect any human being and cause muscle alterations coherent with the emotional state. In this context, posture can be an important tool in terms of the diagnosis and treatment of anger problems. However, there are still very few studies in the literature that have investigated this correlation. The aim of the present study was to investigate the existence of a relationship between the anger emotion and the posture represented by an inclination of the shoulder, forward head, hyperextension of the knees and elevation of the shoulder.

Methods

Twenty-eight women, aged between 20 and 39 years, with a normal body mass index (BMI) value between 18.5 and 24.9 kg/m² (or underweight), were assessed in the present study (WHO, 1998). The women could not be in their menstrual period at the time of the assessment. The exclusion criteria included any psychiatric, neurological or musculoskeletal disorders. The present study received approval from the Human Research Ethics Committee of the UNIFESP under protocol number 1391/05 and the participants signed a statement of informed consent.

The volunteers were subjected to the same assessment protocol which included the demographic data age, weight in kilograms and height in meters. A digital camera (Canon Power Shot A400) was used to record the subject's standing right lateral and frontal views. The temperature in the assessment room was kept at a constant 25 °C to avoid possible alterations in posture. The image was transferred to an Intel Core 2 Duo computer and the angle of protrusion of the shoulder was examined by Corel Draw (Fig. 1), as described by Munhoz et al. (2005). The first step was to draw a line parallel to the ground. For the lateral view, another line was drawn perpendicular to the first line, which had the same function as a plumb line. This line was positioned at the very back of the heel of the subject in the photo. The following angles were measured according to Rosário et al. (2013, 2014): Height of the hands, Angle of Tales, Forward head, Tilting of the Head, Rotation of the Head, Elevation of the shoulders, Shoulder slope, Protrusion of the shoulder, Knee hyperextension, Valgus knee, Valgus ankle. Among these measurements, only those described below showed a relationship with anger.

The following angles were involved in the lateral view:

- Protrusion of the head (A): A line parallel to the plumb line was drawn from C7. Another line was drawn from C7 to the intertragic notch. The angle between both lines,

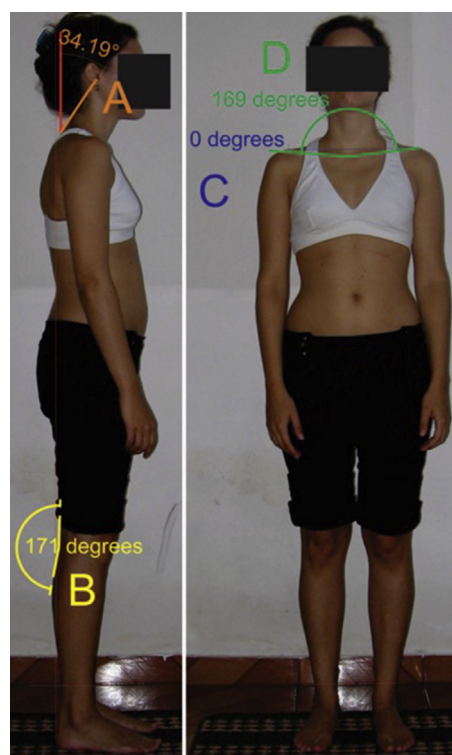


Figure 1 Lateral and frontal photographs with tracings of the angles of protrusion of the head (A), hyperextension of the knees (B), inclination of the shoulders (C) and shoulder elevation (D).

with C7 as the fulcrum, revealed the protrusion angle of the head;

- Hyperextension of the knees (B): the fulcrum was the popliteal fossa. From this point, a line was drawn towards the most posterior part of the hamstrings and another towards the most posterior part of the gastrocnemius.

The following angles were involved in the frontal view:

- Inclination of the shoulders (C) (one shoulder higher than the other – giving the appearance of inclination): an exact copy of the line parallel to the floor (in red) crossed the uppermost part of the acromion. Another line was drawn leaving this point towards the same point on the opposite acromion, with the highest acromion as the fulcrum;
- Elevation of the shoulders (D): the fulcrum was on the suprasternal notch. From this point, a line was drawn towards the highest part of the acromion on both sides.

Analogue scales were used to assess the degree of subjective anger (Williams et al., 2010), which facilitated an assessment of usual anger (a chronic feeling) and current anger (momentary feeling present at the time of assessment). The scales were characterized by a 10 cm line, with the words: “no anger at all” to the extreme left and “Utter rage” to the extreme right, numbered from 0 to 10 (Fig. 2). The volunteers were instructed to make a mark at the part of the line that best described their emotional state.

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