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THERMOGRAPHY AND POSTURE IN ASSOCIATION WITH THE B.A.E. METHOD [1]

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Abstract: *Postural alteration have as a consequence a variation of the muscular work of the various parts of the body. The thermographical investigation of the body surfaces as a whole allows a comparison with the photographic images used with the B.A.E. method. The thermography confirms and strengthen the vision of the symmetry as it allows the verify of the heat developed by the muscles and makes it proportional to their visual symmetry. Method: people treated with the B.A.E. method, checked with classic photography and thermography shows a perfect coherence between the two types of investigations: the thermography allows the verification of the variation of the muscular work in real time unlike the normal photography which is good at a time distance but with a minimal effectiveness in short periods of time.*

Keywords: *Posture, B.A.E. method, thermography applied to people.*
JEL Codes: I 10, I 20

INTRODUCTION

A thermocamera register the intensity of the radiation in the infrared part of the electromagnetic spectrum and convert it into a visual image.

The thermography transforms an infrared image into a radiometric image, on which is possible to read the temperature values. So every pixel in the radiometric image is indeed a temperature measurement. In order to make this possible, in the thermocamera are incorporated complex algorithms. This makes the thermography the perfect instrument for the application in the scientific field.

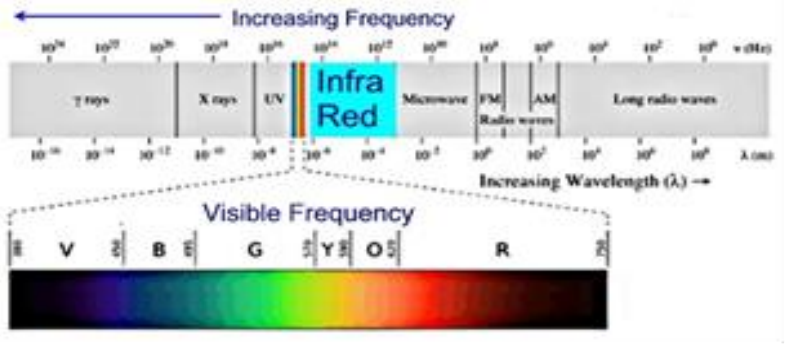

Fig. 1. Greater is the intensity of the infrared radiation emitted

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The infrared radiation can be touched with a hand every single day. The heat that we feel comes from the sun, from a fire, or from a heater, it's none other than another infrared. Despite the fact that our eyes cannot see them, the nerves in our skin are able to sense as heat. More a body is hot, greater is the intensity of the infrared radiation emitted (Fig. 1.)

Below again another scale of the frequency of the electromagnetic waves insert in a context of general life (Fig. 2.).

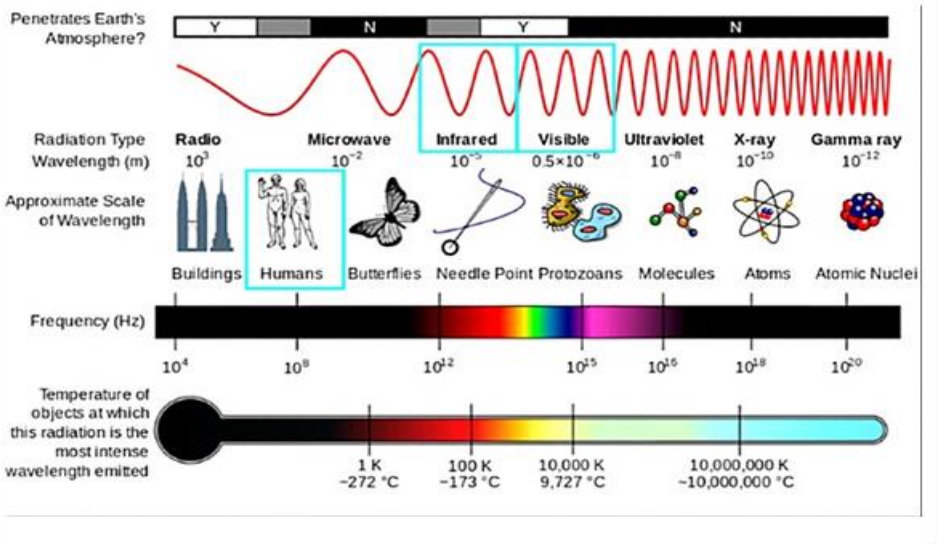


Fig. 2. Scale of the frequency of the electromagnetic waves insert in a context of general life

Then a rehabilitator as a physiotherapist can see the fruit of his work, the teaching of the gymnastic can see how groups of musclus of different people work.

The postural ergonomist with the thermography has direction, in relation to the coherence of the work of groups of muscles of the body in exam, as we obtain the symmetry of the latter.

EXPOSITION

THERMOGRAPHY IN THE HEALTH AND MEDICINE ENVIRONMENT

It allows to perform the so called thermal map namely to detect the caloric distribution at the level of the cutaneous body surface. In situation of thermic equilibrium with the environment, the temperature of a specific skin area depends on two factors: cellular metabolism of the tissues underneath and **vascular surface trellis.** The skin form therefore an "interspace" between the intern environment (body structure) and the extern environment.

Materials and Methods:

Coal Industrial & Mining Supplie, tipe: HT-A2 Handheld IR camera

Biomeccanic Antropometric Ergonomic method B.A.E.

Fig. 3. Research of breast cancer

They have existed for a long time, for strictly medical use, sophisticated equipement for the observationof phatological situations able to induce thermic modification, an example is represented by the research of breast cancer (Fig. 3.).

The technical equipement comprehend (TTC) and a unit of revelation (display system and monitor) that can be replaced by an acquisition unit, elaboration and data storage cmputerised, with a significant increase and maneuverability of the informations obtained.

The TTC convert energy transported by the bundle of infrared radiation (IR) emitted by the skin surface which, amplified,is sent via a cable to the rilevation unit.

The TTC is made up of 2 lens systems (L1 and L2), 2 rotating prism (A1 and A2), detectors systems and a pre-amplifier.

The thermographic image thus obtained is the thermic representation of the skin surface examined.

The thermography performed with infrared digital cameras is an analysis technique non-invasive which is based on the acquisition of the infrared image. The thermographic method finds application in numerous sectors, such as: iron metallurgy, building, veterinary medicine, chemical industry, cultural heritage, aeronatics, automotive and environmental protection.

Since when the technology could develop the definition at good levels even in small portable machines the thermography can be used with success even for the study of the human body even though it’s not possible at the moment with this type of portable machines to make mappings well defined of the single surfaces. With them is however possible to see superfically, at a cutaneous level, the energy used for the movement and the tone of the muscular bundle which is detectable in the form of heat. This fact is clearly visible and is strongly indicative.

The photografic image of a person allows us to understand if some muscles work more or less and mostly if there is the symmetry in the work of the muscular bundles between the two body parts.

The interesting thing and highly significant is that these image offer us the possibility to comprehend in real time the variation of the muscular work. If we create the variation in the various postural receptor zones of the body we can observe immediately how groups of muscles change the way they work, this allows us to verify our work of muscular recovery and if the protocols as the B.A.E. method are coherent with this instrument. How we can observe in some cases is possible to see clearly the improvements in based on corrections made by us, with the B.A.E. method, on the posture of a person. In the first try we had the client wear an interface of adaptation of the standard type. Adjustement on the person (Fig,4.).

Fig.4.

Below we can see at the elapse of time how the gluteus muscles of the person, which wore the interfeces of Fig.4, increased their work causing a postural change well visible from the thermografical images.

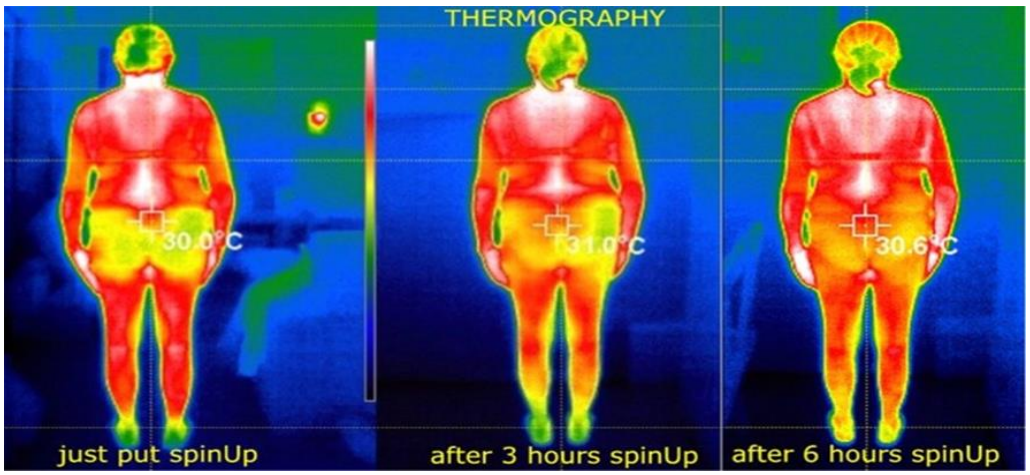
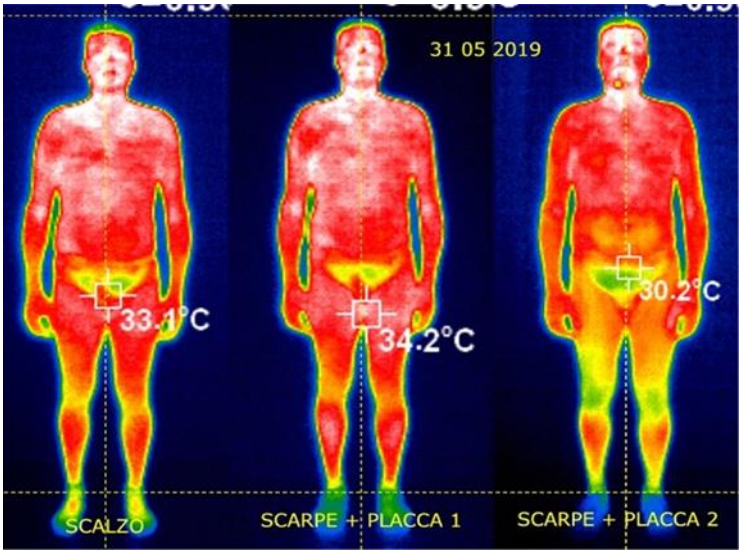


Fig. 5.

After 6 hours the gluteus muscles emitted a greater amount of heat, showing greater work, while the muscles of the posterior side of the inferior limb work less, overall it appears clear the symmetry of the person also a greater work in the all back.



BAREFOOT INTERFACES.+ PLAQUE INCREASE O. ARCH R.

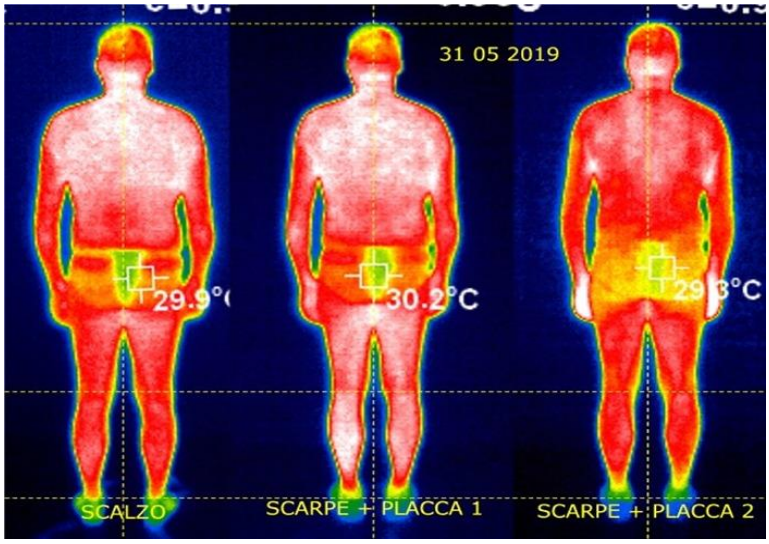
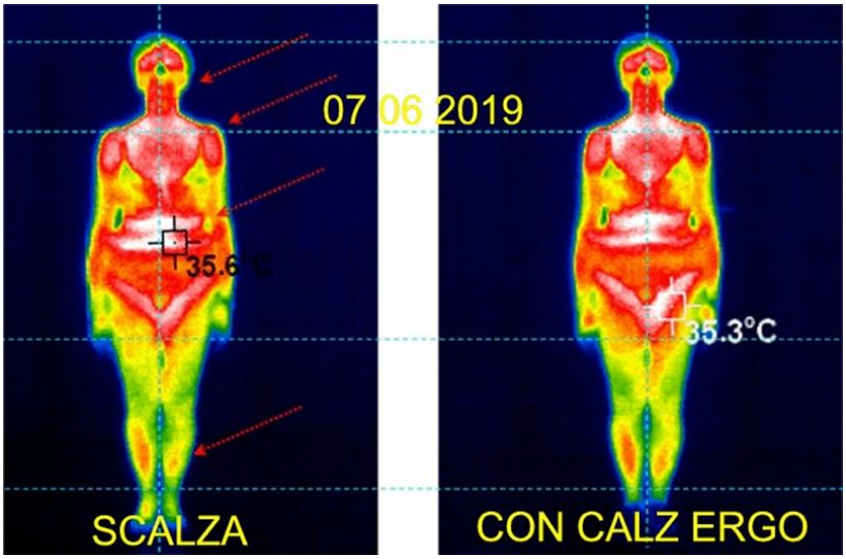


Fig. 6.

At last we will insert the images of a 65 women with an important lumbar scoliosis, during the check up where we can observe the difference in the triangles od the size over the differentvof others groups of muscles, in general after wearing the ergonomic shoes according to the B.A.E. method results more erect (Fig. 7.).



BAREFOOT **INTERFACES ERGO SHOES**

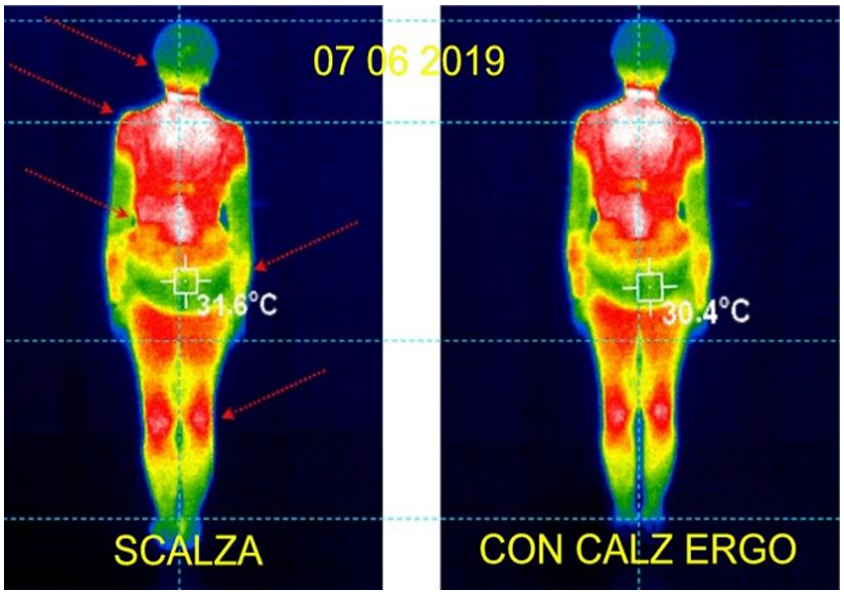


Fig. 7.

CONCLUSION

With this article it proves show clearly the thermography is a technique which allows rapidely and obgetively the verify of the postural variation of a person.

The thermography allows to make objective the postural corrections made on a person immediately and to follow over time the changes associated to the photography as well as the spirometry.

Allows to help the professional in the postural correction according to the B.A.E. method.

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