The Impact of Design Overkill Versus Ergonomic Considerations - Men's Jeans Trousers

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ABSTRACT

Ergonomic design is a methodology that deals with understanding and predicting issues related to the interaction between human and many interfaces, culminating in the application of ergonomic and usability criteria in design. Among the many interfaces which humans face on a daily basis, which include a pen, the steering wheel of a car, the workplace in a company and information boards, are clothes, especially clothes in their relationship with fashion and the human body. In order to ensure the continuity of the fashion cycle, fashion design proposes alterations to the pieces of clothing, to give them a novelty appearance and operate at the symbolic level of the product. However, some alterations are made without considering ergonomic criteria of usability and functionality. This study aimed to evaluate, via direct approach to male jeans users, their perception regarding discomfort in relation to the design elements used for adding aesthetic distinction to products. A protocol were applied to 10 (ten) users, in order to assess their perception (Likert scale) of five (5) different products, of which one stood out significantly in several aspects of the evaluation. The products of the fashion category "over" had higher rates of general discomfort of the product.

Keywords: Fashion Design, Ergonomic Design, Jeans Trousers

INTRODUCTION

Fashion design has decisively influenced contemporary lifestyle, sometimes assigning symbolic values to users of clothing, footwear, accessories and others; sometimes providing different ways of use, due to the versatility of these products, or even for the need to perform daily life activities. An example of this influence is in men's clothing, especially in pants, which are the fashion objects most used by the male population in the West.

The growth of fashion, clothing and textile market provided an opportunity and compelled the industries of this sector to meet a growing demand for products with higher aesthetic and symbolic quality, without considering the aspects of function and comfort as of major importance at a first. Most studies in the field of fashion involve issues which are strictly aesthetic and symbolic, but Fashion Design must also approach aspects of ergonomics, functionality and product usability. The relationship between fashion and ergonomics was almost the establishment

of a postulate: if anything was beautiful, it was not comfortable; if it was comfortable, it was ugly. For Rosa and Moraes (2008), although "... most of clothing products satisfactorily meet ergonomic criteria [...] still, in many clothing design projects, the contributions from ergonomic studies to clothes manufacturing are rarely considered or even unknown" (p. 2262-3). This finding is plausible, as it is understood that fashion can be considered an important branch of design, and from this, it is still implicit (using a metaphorical language) the existence of an adaptation phase marked by many errors, many hits, many attempts, many experiences and, above all, between "saying", "evaluating" and "applying" ergonomics.

There is almost obviousness in proclaiming a close relationship between fashion and ergonomics. In practice, this relationship is indeed more related to anthropometry, for using the human body measurements to execute clothing templates, which (erroneously) presupposes a thorough understanding of ergonomic values applied to the practice of clothing design project. However, one must go beyond obviousness to understand the complexity, nay, the multiplicity of variables of this relationship. Gomes Filho (2003), states that "...some problems which are typical of reflections concerning ergonomics may not be addressed adequately in the object design, [...] (which) contribute to decrease its performance quality and possibly cause insecurity and discomfort to the users" (p. 24).

On the other hand, the label of futility, as suggested by Monneyron (2007), put the Fashion product in a delicate exclusive position in relation to the design itself and ergonomics in a general way. There is still no fundamental perception of clothing as a vital interface for man to exercise his relationship with many other interfaces of everyday life, which, for a long time, moved Fashion away from countless new possibilities that ergonomic knowledge could bring to their products (applications).

Ergonomics seeks to solve social problems of health, safety, comfort and efficiency, [...] and that in the specific case of clothing, such principles are applied with regards to the function of use, which is adequacy of materials, anthropometric adequacy and functional adequacy, in ease of use, safety, comfort, durability, aesthetics and even an affordable price (Rosa and Moraes, 2008, p.2262-3).

Ergonomics have its goals officially defined as the optimized promotion of the overall performance of a system and human well-being, through understanding the interactions between human beings and other elements of a system, and also the application of theory, principles, data and design methods (International Ergonomics Association (IEA), 2000 apud ABERGO, 2010).

The last definitions renewed and reorganized the relationship between fashion design and ergonomics, for understanding, expanding and applying ergonomic knowledge to the design and execution of (clothing) products which will be used directly and intimately over the human body, i.e. clothing starts to be considered an interface as well, which is the interface that is between a man and the other interfaces with which he will interact daily.

On the other hand, aesthetic aspects – which are widely exploited by fashion design – have also demonstrated an influence on the perception of usability. According to Löbach (2001), the aesthetic function of a product is responsible for awakening the attention of the user, once a product with high aesthetic value stands out from the rest. However, products with high aesthetic value become easy to use due to sensations of pleasure, satisfaction and joy, which are determined by their appearance (Norman, 2008).

In the late twentieth century, Kurosu and Kashimura (1995) would already affirm that users of a particular product can be strongly affected by the aesthetic aspects of it, even when they the interface (of the product) is evaluated in its functional aspects. In this sense, product characteristics such as appearance, color or texture, are able to trigger specific emotional responses associated with the use of it, which may influence the opinion of users (Tsao and Chen, 2007).

However, despite these claims, Tractinsky (1997) states there to be the need to include tests of aesthetic sensitivity in usability studies, given the importance of aesthetics in design and the small number of studies in the area. Currently, it is still found a small number of ergonomic studies in the area of fashion design, despite the size and importance the area has come to.

This way, when it comes to evaluating the ergonomic perception of a product which is so used nowadays, such as men's jeans, the question is: how do different aesthetic features which are present in this product influence their users' perception of discomfort? This study aimed to present some possible answers to this research question.

MATERIALS AND METHODS

All the methodological procedures of this study were based on inductive reasoning, characterized by a cross-sectional study, with field approach and exploratory approach (Gil, 2010). Another highlight was the approval of the Committee of Ethics in Research with Humans of Paranaense University (Prot. 1003/2011), in accordance with Resolution 196/96-CNS-MS and "Norma BR 1002 ERG", from the " Code of Ethics of the Certified Ergonomist" (ABERGO, 2003).

Ten (10) male subjects were approached, mean age 24.70 years (SD 4.59). On average, they work 8.3 hours a day (SD 0.67), which was a requirement for participation in the study, besides being linked to some labor activity in the morning and afternoon and performing an academic activity at night period. Obeying the exclusion factors, those subjects who were not jeans users, were minors or refused to participate and/or did not sign the Free and Clarified Consent Term, did not participate in the study.

Protocols for evaluation of aesthetic, symbolic and usability perception, particularly aspects of comfort/discomfort, organized based on Likert scales (Tullis and Albert, 2008) were used. Pairs of adjectives were based on bipolar descriptors. Seven anchors were used on a horizontal scale, in which the anchor to the left was used as a negative descriptor and the anchor to the right as a positive descriptor , facilitating the perception by the users and, consequently, making easy for them to fill in the forms.

Five pairs of men's jeans, then identified by "I" (up fashion), "F" (over fashion), "L" (over fashion), "S" (up fashion) and "Z" (basic, or control) were evaluated (Figure 01). It was requested that, each day, the individuals wore an only pair of jeans for the morning, evening and night. At the end of this period of use, the subject (individually) should fulfill the protocol of evaluation and perception of comfort/discomfort. The order of use of the pairs of jeans was random.

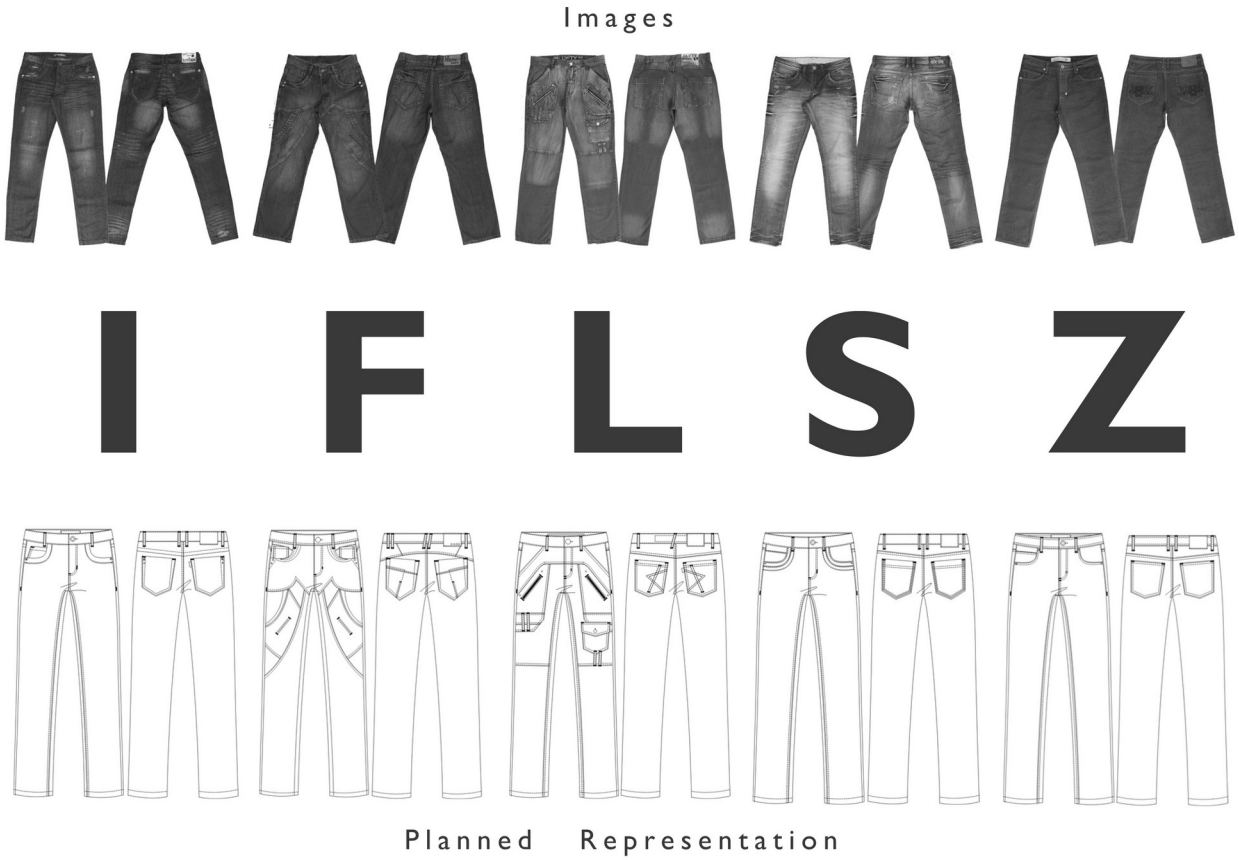

Figure 01 - Five pairs of men's jeans, identified by "I" (up fashion), "F" (over fashion), "L" (over

fashion), "S" (up fashion) and "Z" (basic) (images and planned representation).

Statistical analysis considered that, for all samples analyzed, the assumptions of normality were not attended. Thus it was decided to apply the Wilcoxon non-parametric test, with significance level of $p \leq 0.05$, in order to identify statistically significant differences between the dependent variables (modal categories), and Duncan post-hoc test to verify in which situations the difference occurs.

RESULTS

The results of comfort perception (on a scale of zero – extremely discomfort – to five – extremely comfort) for the variables of the dimensions, accessories, softness, temperature, modeling, social and overall quality are presented in Figures 02 to15.

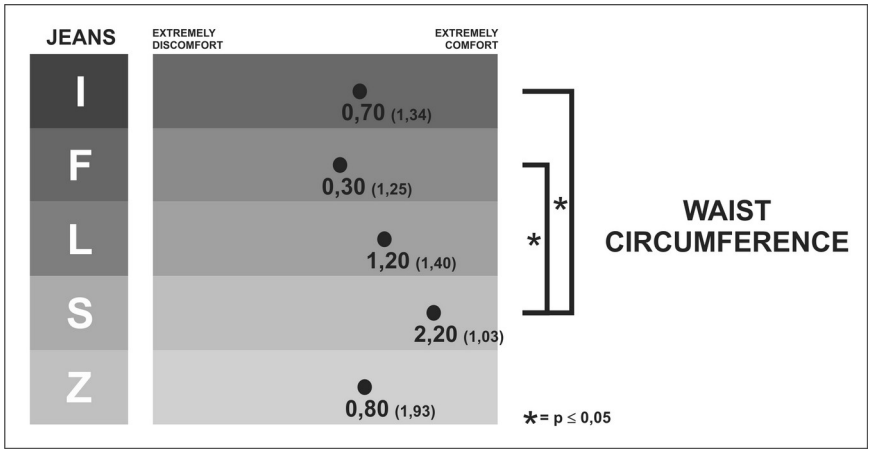

Figure 02 - Perceived level of discomfort / comfort waist circumference.

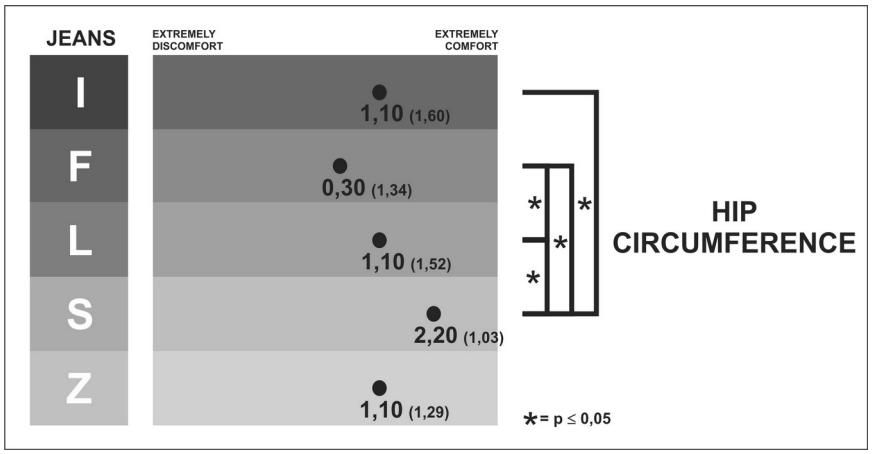

Figure 03 - Perceived level of discomfort / comfort hip circumference.

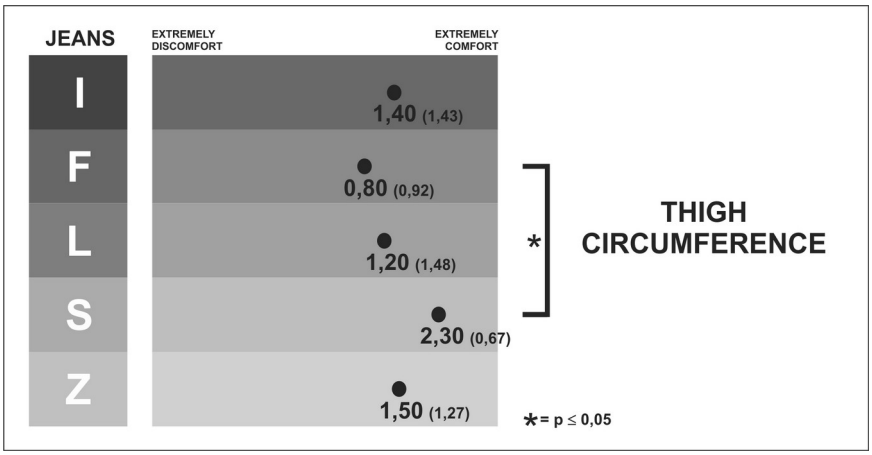

Figure 04 - Perceived level of discomfort / comfort thigh circumference.

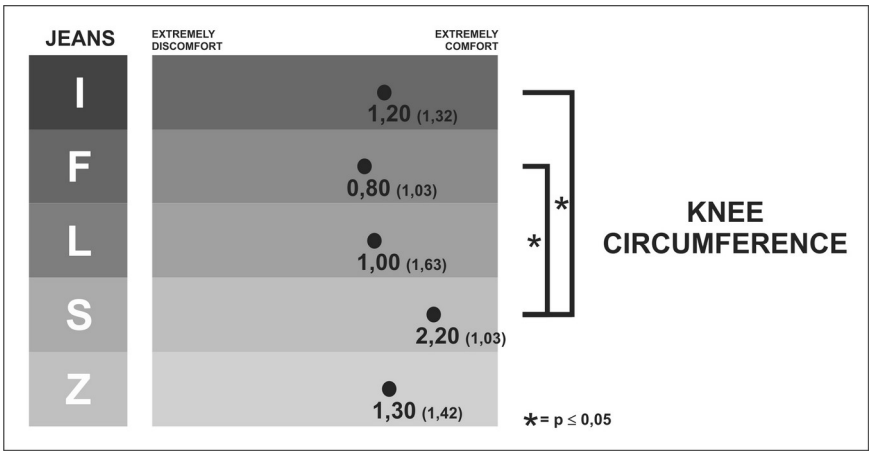

Figure 05 - Perceived level of discomfort / comfort knee circumference.

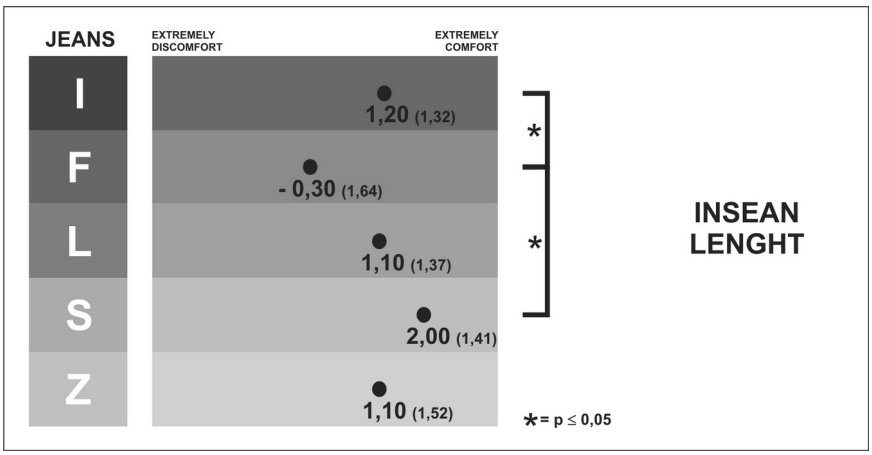

Figure 06 - Perceived level of discomfort / comfort inseam lenght.

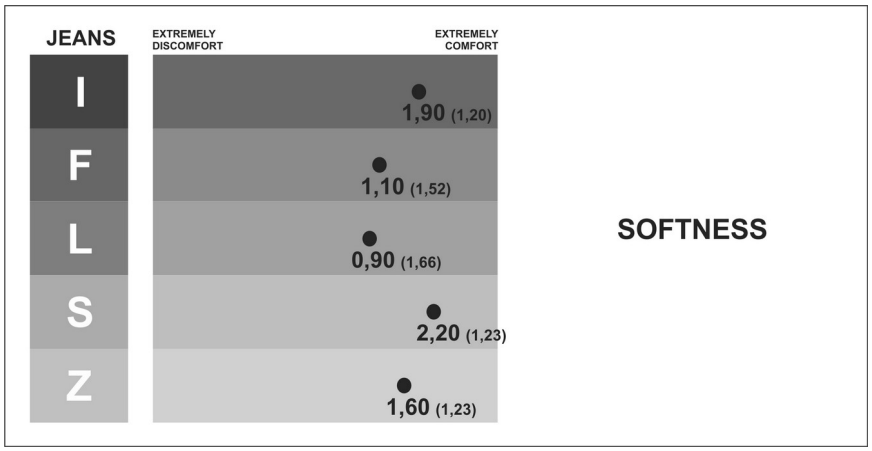

Figure 07 - Perceived level of discomfort / comfort inseam softness.

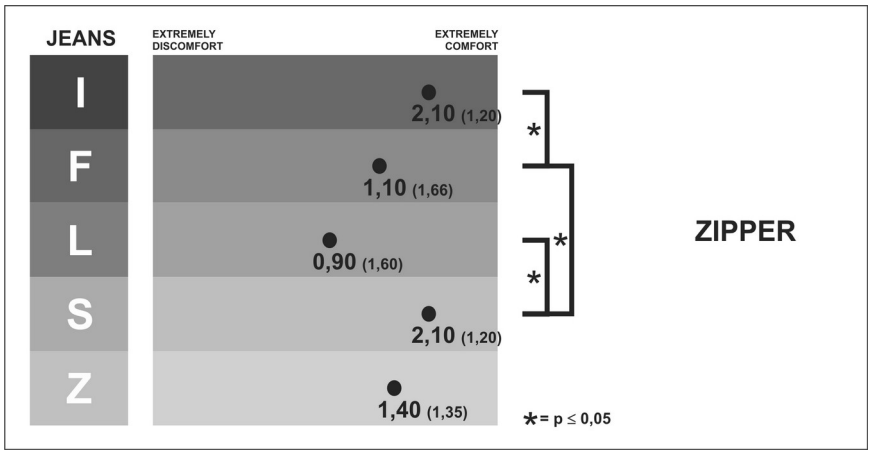

Figure 08 - Perceived level of discomfort / comfort zipper.

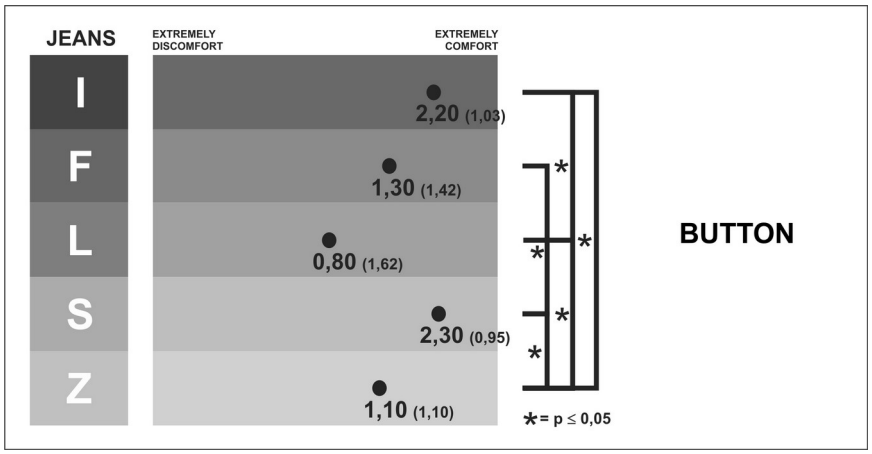

Figure 09 - Perceived level of discomfort / comfort button.

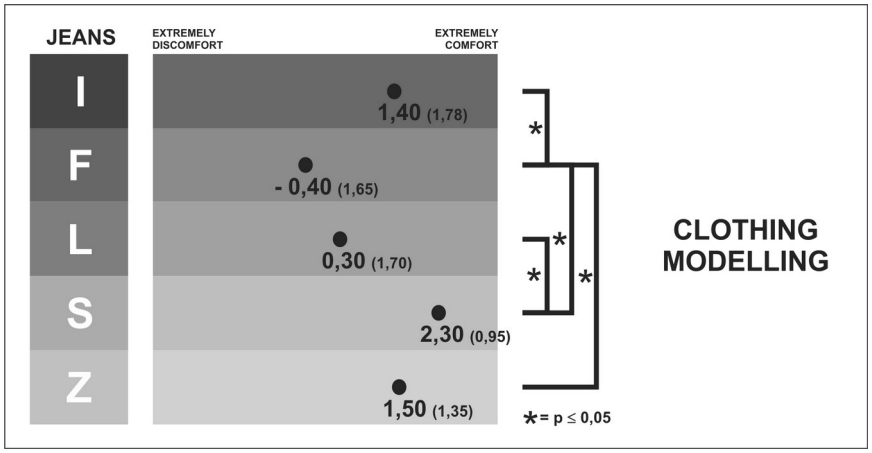

Figure 10 - Perceived level of discomfort / comfort clothing modelling.

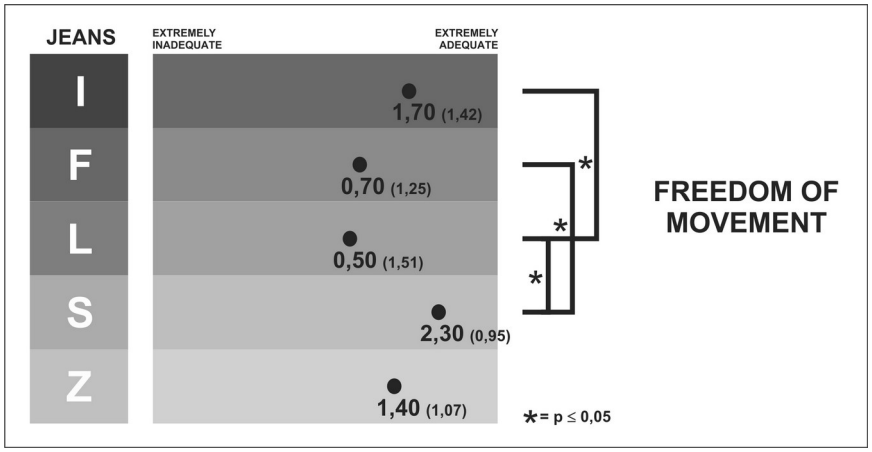

Figure 11 - Perceived level of discomfort / comfort freedom of movement.

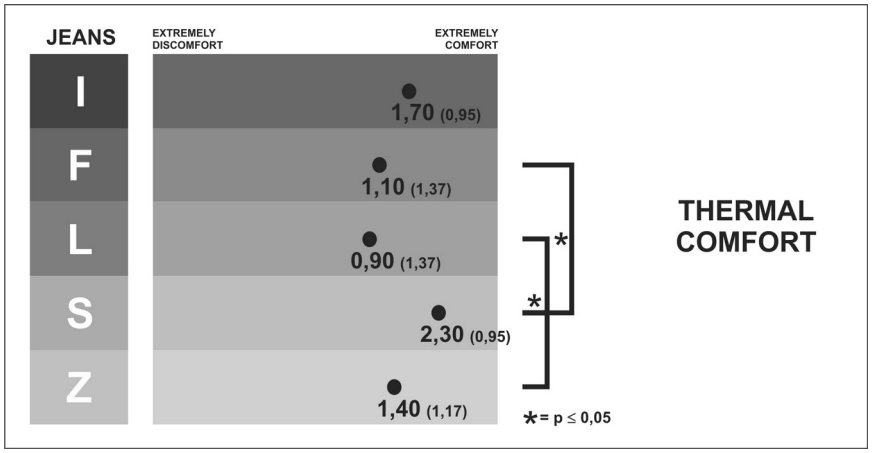

Figure 12 - Perceived level of discomfort / comfort thermal comfort.

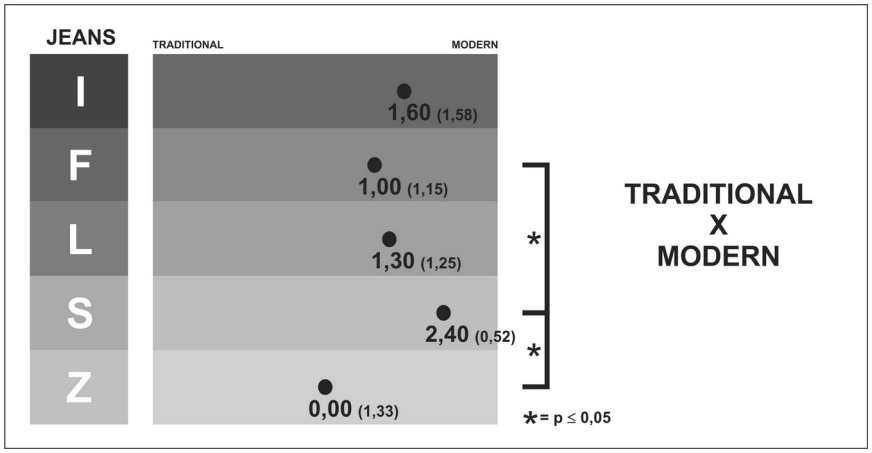

Figure 13 - Perceived level of traditional / modern.

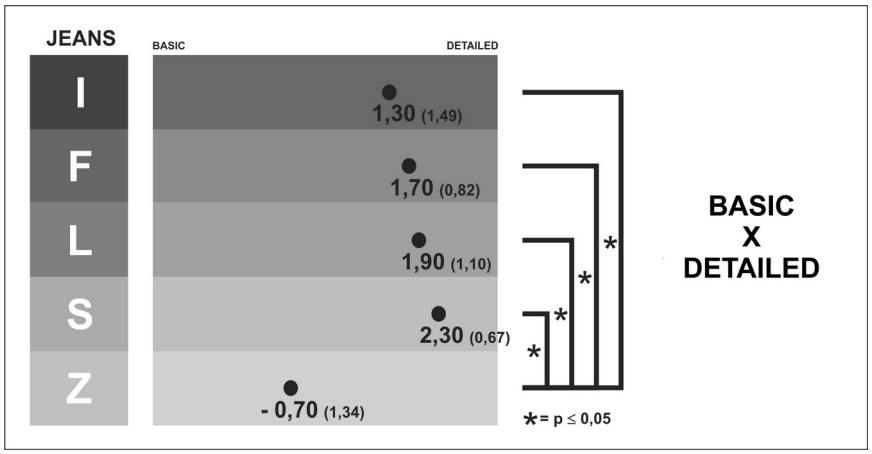

Figure 14 - Perceived level of basic / detailed.

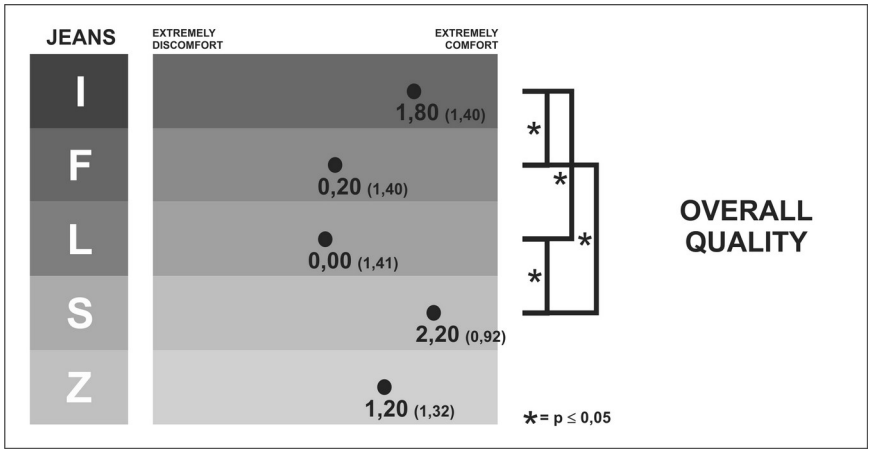

Figure 15 - Perceived level of discomfort / comfort overall quality.

DISCUSSION AND CONCLUSION

The final results indicate that, as to the overall dimensions (waist circumference, hip circumference, thigh circumference, knee circumference and inseam length), the 'S' jeans obtained the best evaluation in all five variables analyzed, while the 'F' jeans obtained the worst evaluation, also in all five variables. In all analyzes the difference was statistically significant ($p \leq 0.05$) between the two pairs of jeans.

As to softness, the 'L' jeans were the worst evaluated and the 'S' obtained the best evaluation. Statistically significant differences although not detected. As to zippers and buttons, the 'L' jeans were worse evaluated and the 'S' one the best evaluated in both variables, with statistically significant differences ($p \leq 0.05$) between the two pairs of jeans. The same condition was seen as to freedom of movement and perception of thermal comfort. But for clothing modelling, the 'F' jeans were worse evaluated and 'S' the best evaluated, with statistically significant differences ($p \leq 0.05$) between the two pairs of jeans.

Regarding the perception between traditional and modern, the 'S' jeans were considered more modern and the 'Z' jeans more traditional, with a statistically significant difference ($p \leq 0.05$) between the two pairs of jeans. And as to the perception between basic and detailed, the 'S' jeans were considered more detailed and the 'Z' jeans the most basic, there also being statistically significant difference ($p \leq 0.05$) between them. In the latter case, it is worth pointing out that the perception of details surpassed the aspects related only to the use of many references. In fact, the subjects considered clothing production quality, since they realized a more elaborate (detailed) design in the 'S' jeans. Therefore, we can confirm that the "over" style, which is an element of fashion can influence the users' perception of discomfort, since in most of the variables analyzed, the pairs of jeans from this modal group showed ('F' – 42.85 % of the variables and 'L' – 42.85% of the variables) a worse evaluation – in many cases, significantly.

Anyway, fashion needs to know the parameters of ergonomic design, which can, besides the obvious criteria of maintaining the health state of the body, promote compliance and further discussion of the multiple levels of perceived comfort, even as a guideline for future studies in this area.

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