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CONFERENCE PAPERS

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ERGONOMIC SEATING: THE SEAT-DEPTH PROBLEMS**MURAT DARCIN****ASSOCIATE PROFESSOR****GENDARMERIE & COAST GUARD ACADEMY****ANKARA****MURAT ALKAN****Sr. LECTURER****GENDARMERIE & COAST GUARD ACADEMY****ANKARA****GURDOGAN DOGRUL****Sr. LECTURER****GENDARMERIE & COAST GUARD ACADEMY****ANKARA****ABSTRACT**

Anthropometric measurement results are taken into consideration at the design stage in the manufacturing of an ergonomic chair but there are few research studies on seat depth. In this study, the seat depths of some chairs and the buttock-popliteal lengths (BPL) of their users were measured. The purpose of this study was to determine whether the seat depths of the office chairs sold in Turkey are compatible with the Turkish people or not. It was determined that the problem of incongruity arises from seat depth. At the end of this study, it was determined that 64 (53%) of the 120 office chairs are compatible with the anthropometric measurements of the users. The differing sensitivity in the buttock and thigh areas between populations is an indication that chairs should be designed and selected for the specific population under consideration. Correct posture on a chair designed by using the anthropometric data reduces back and shoulder pain. Sitting depth significantly affects the design of other seat components.

KEYWORDS

anthropometry, buttock-popliteal length, office chair, seat depth, seating.

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INTRODUCTION

Because sitting is one of the main activities human beings do over their lifetime, many studies have been done on office chair comfort. In the last 20 years, the ergonomic design of office chairs has gained major importance. Sitting is described as a body position in which the weight of the body is held and transferred to a supporting area by the ischial tuberosities of the pelvis and their surrounding soft tissue [Chaffin et al., 2006; Pynt et al., 2001]. In studies about sitting comfort, objective and subjective data are associated with each other in order to determine the relative effects of the comfort. This kind of study focused mainly on the comparative comfort characteristics of different seat cushions [Seigler, 2002]. However, in contemporary ergonomic office chair designs, basic anthropometric measurements such as shoulder width, hip breadth while sitting, sitting height, shoulder height, sitting elbow height, buttocks-knee length, buttock-popliteal length (BPL), knee height, and popliteal height should be taken into consideration. Although anthropometry alone might not provide all the comfort required, it is important to determine the functional dimensions of the office chairs [Corlett, 1999; Vergara and Page, 2002].

The body weight of a seated person is primarily carried by the lower part of ischial tuberosities of the pelvis; three-fourths of the body weight is supported by a small area of 26 cm² [Parcells et al., 1999]; 45% of the weight of a person is supported by ischial tuberosities. Since the impact of body weight on the soft tissues is unavoidable, the sitting posture remains to be one of the key factors affecting comfort [Seigler, 2002]. According to Branton (1969), 65% of body weight is borne by the seat pan [Branton, 1969]. Therefore, seat dimensions are a key determinant for the support of user's lumbar region [Kolich, 2003]. However, the seat pan cannot by itself hold the entire body — the muscles of the legs, feet, and back also help to support the body in a proper sitting posture [Branton, 1969]. Seat depth is the most critical issue in the sitting posture because a seat depth that is too short or too long removes these supports for the body and causes the body weight to put pressure on the wrong areas. This results in bad posture which in turn leads to various health problems [Seigler, 2002, Panero and Zeinik, 1979; Shen and Vertiz, 1997; Diane et al., 2006].

When the seat pan depth is more than normal (too long), the seat pan front will put pressure on the region behind the knee and hamper blood circulation throughout the legs [Pheasant, 1996; Smellie, 2003]. In order to mitigate this problem, the user will lean forward and lose waist and back support [Parcells et al., 1999; Smellie, 2003]. Moreover, a too long a seat pan depth prevents the user from getting the benefit of the armrest and back support that share the pressure on the backbone [Goonetilleke and Feizhou, 2001]. On the other hand, too short seat pans cause discomfort by removing necessary body supports; they increase the load on the buttocks by removing the support to the lower thighs giving the user an impression of falling forward [Panero and Zeinik, 1979; Collins, 1999].

The purpose of this study was to determine whether the seat depths of the office chairs sold in Turkey are compatible with the Turkish people or not. In this study, only seat depth was investigated instead of the relevant components used in office chair designs. The main reason for the choice is that there has been a good deal of research on the other components of office chair design including the adjustable mechanisms that provide suitable seating for a wide range of people. The seat depths of the office chairs and the BPLs of chair users were measured and compared, and the conformity between them was determined.

METHOD

The measurements were gathered from the BPLs of 120 workers (80 male, 40 female) and 48 office chairs. Due to the subject matter of this study, only the BPL of the subjects was measured. BPL is the horizontal distance from the rearmost surface of the buttock to the back of the knee [Parcells et al., 1999; Pheasant, 1996]. In the anthropometric measurements performed, the subject sat in a position in which the thighs touched the seat pan completely, the seating surface reached the knee hollow as far as possible, the lower legs were held vertical to the floor or solid surface, and the lower buttocks were fixed with a block attached vertically against the seat pan. Then the distance between the block and BPL was measured by using a standard Martin-type anthropometer. The measurements were taken from the subjects in a situation in which they felt relaxed. None of the subjects had any musculoskeletal injuries. Measurements were taken from the subjects in their daily work clothes so no allowance or extra margin was added to the measurements. Each subject was asked their first name, surname, age, date and place of birth. After this data (plus the gender) was recorded on the data form, an expert measured the BPLs with an anthropometer.

Seat depth was determined by measuring the horizontal distance from the back (starting point of the buttocks) to the front edge of the seat pan [Parcells et al., 1999, Karwowski, 2001].

RESULTS

The seat depth measurements of 48 office chairs, the BPL of 120 office workers who use these 48 types, seat depth lower limit ($LL = SD \cdot 0.8$) and upper limit ($UL = SD \cdot 0.95$) based on the values of SD and BPL are found. The seat depth is regarded as "compatible" (C) if it is between the 80-95% of the BPL ($LL \leq SD \leq UL$), "incompatible and extremely short" (ES) below 80%, and "incompatible and extremely long" (EL) above 95%. In other words, user-friendly seat depth is acceptable at shorter than 95% of the user's BPL and longer than 80% [Parcells et al., 1999]. At the end of this study, it was determined that 64 (53%) of the 120 office chairs are compatible with the anthropometric measurements of the users. The other 56 (47%) chairs are incompatible with the users. Among the incompatible office chairs, it is found that 45 of them are extremely long and 11 are extremely short. The incompatibility ratio of the office chairs used by female workers is 57%. The main reason for the incompatibility is the extremely long seat depths. The incompatibility ratio of the office chairs used by male workers is 41% (33 office chairs in total).

DISCUSSION

When determining the appropriate seat depth, BPL was taken into consideration. However, some ergonomists argued that there should be a space between the back of the leg and the seat pan which would enable the knees to bend 80 degrees when the user is standing up [Diffrient et al., 1974]. Some studies supported the argument that longer seat pans cause discomfort during sitting and standing [Pheasant, 1996; Smellie, 2003]. Moreover, it is suggested leaving a 2 cm space between the back of the knee and the seat pan when determining the seat depth [Collins, 1999]. Some studies noted that depth should be at least 5 cm shorter than BPL [Gouvali and Boudolos, 2006; Poulakakis and Marmaras, 1998]. Most researchers report that seat depth should be designated for the fifth percentile of BPL distribution, including even the shorter users [Milanese and Grimmer, 2004; Occhipinti et al., 1993; Helander, 2003].

As this study suggests, longer seat depths abate the benefits of back rest and height adjustment and also cause the user to lean forward in order to mitigate the pressure of the front edge of the seat pan to the back of the knees [Smellie, 2003]. Moreover, the user experiences discomfort, especially on the back of the knees due to restricted blood circulation caused by the longer seat depths, when trying to use the back and arm rests. On the other hand, shorter seat depths don't allow the user to utilize the support components of the office chairs properly [Panero and Zeinik, 1979; Collins, 1999]. Thus, both longer and shorter seat depths are problematic.

Despite this kind of study, chair manufacturers are not expected to produce office chairs with adjustable seat depths. But, even if they continue their conventional production, the producers will have to offer their products with suitable anthropometric properties to the target populations. Just as clothes and shoes are classified according to size, the manufacturers might provide the consumers the appropriate products and, in doing so, will increase consumer awareness of the subject. It is now time for consumers to focus on ergonomic comfort and not just taste or choice. Both consumers and manufacturers will benefit in the end; consumers will be satisfied because they will have the chance to sit on office chairs that they like and the firms will produce more ergonomic products which will increase their sales.

Adequate lumbar support is one of the most crucial functions of a backrest. Inadequate support places excessive pressure on the spine. The backrest should either be small enough to fit into the small of the back, clearing the pelvis and back of the rib cage, or curved to provide adequate support. Many office chairs come with a built-in lumbar adjustment option and most have some type of seat height adjustment mechanism that allows the user to adjust the chair so the feet can rest on the floor while upper body is properly aligned with tools such as computer monitor, keyboard, etc. Users generally prefer office chairs with such features, however, seat depth, which has been neglected by manufacturers for such a long time, is one of the most important elements in the design of ergonomic office chairs. It is not an exaggeration to say that the firms that will focus widely on the adjustable seat depths will have a comparative advantage in the market.

CONCLUSION

The results of this study indicate that office chairs should have adjustable seat depths despite the increase in cost it may entail or that office chairs should be marketed according to the BPL of the consumers. People's expectations are changing along with their physical size. It is obvious that new office chairs will be produced in the course of the changes and it should be kept in mind that the designs which don't take human characteristics into consideration cannot continue.

REFERENCES

1. Chaffin, D. B., Anderson, G. B. J., and Martin, B. J. (2006), "Occupational Biomechanics, (4th Edition)." John Wiley & Sons Inc., New York.
2. Pynt, J., Higgs, J., and Mackey, M. (2001), "Seeking the Optimal Posture of the Seated Lumbar, Spine," *Physiotherapy Theory and Practice*, 17(1), pp. 5–21.
3. Seigler, M. T. (2002). "A comparative analysis of air-inflated and foam seat cushions for truck seats," Master thesis, Mechanical Engineering in Faculty of the Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
4. Corlett, E. N. (1999), "Are You Sitting Comfortably," *International Journal of Industrial Ergonomics*, 24, pp. 7-12.
5. Vergara, M., and Page, A. (2002), "Relationship Between Comfort and Back Posture and Mobility in Sitting-posture," *Applied Ergonomics*, 33, pp. 1-8.
6. Parcells, C., Stommel, M., and Hubbard, R. P. (1999), "Mismatch of Classroom Furniture and Student Body Dimensions: Empirical Findings and Health Implications," *Journal of Adolescent Health*, 24, pp. 265-273.
7. Branton, P. (1969), "Behaviour, Body Mechanics and Discomfort," *Ergonomics*, 12, pp. 316-327.
8. Kolich, M. (2003), "Automobile Seat Comfort: Occupant Preferences vs. Anthropometric Accommodation," *Applied Ergonomics*, 34, pp. 177-184.
9. Panero, J., and Zeinik, M. (1979), "Human Dimension and Interior Space." Watson-Guptill, New York,
10. Shen, W., and Vertiz, A. (1997), "Redefining seat comfort," *SAE Transactions, Journal of Passenger Cars*, 6(1), pp. 1066-1073.
11. Diane E. G., Nadine M. D, and Jack P. C. (2006), "Stability Ball Versus Office Chair: Comparison of Muscle Activation and Lumbar Spine Posture During Prolonged Sitting," *Human Factors*, 48, pp. 142-153.
12. Pheasant, S. (1996), "Bodyspace: Anthropometry, Ergonomics and the Design of Work (2nd ed.)." Taylor & Francis, London.
13. Smellie, S. (2003), "The Limitations of a Standard Workstation for its User Population," *Ergonomics*, 6(3-4), pp. 101-108.
14. Goonetilleke, R. S., and Feizhou, S. (2001), "A Methodology to Determine the Optimum Seat Depth," *International Journal of Industrial Ergonomics*, 27, pp. 207-217.
15. Collins, F. (1999), "Preventing Pressure Sores in the Seated Patient," *Nursing Standard*, 13(42), pp. 50-54.
16. Karwowski, W. (2001), "International Encyclopedia of Ergonomics & Human Factors." Taylor & Francis, London.
17. Diffrient, N., Tilley, A., and Bardagjy, J. (1974), "Humanscale 1/2/3: A Portfolio of Information." MIT Press, Cambridge, MA.
18. Gouvali, M. K., and Boudolos, K. (2006), "Match between school furniture dimensions and children's anthropometry," *Applied Ergonomics*, 37(6), pp. 765-773.
19. Poulakakis, G., Marmaras, N. (1998), A model for the ergonomic design of office," *Proceedings of the Ergonomics Conference in Cape Town: Global Ergonomics*, P. A. Scott, R. S. Bridger, and J. Charteris (Eds.), Cape Town, South Africa, pp. 500–504.
20. Milanese, S., and Grimmer, K. (2004), "School furniture and the user population: an anthropometric perspective," *Ergonomics*, 47(4), pp. 416–426.
21. Occhipinti, E., Colombini, D., Molteni, G., and Grieco, A. (1993), "Criteria for the ergonomic evaluation of workchairs," *Le Medicinadel Lavoro*, 84(4), pp. 274–285.
22. Helander, M. G. (2003), "Forget About Ergonomics in Chair Design? Focus on Aesthetics and Comfort!" *Ergonomics*, 46(13/14), pp. 1306-1319.

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