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Body Movement Comfort Performances of Shirts Intended for Bellied Males

Göbekli Erkek Bireylere Yönelik Olarak Hazırlanan Gömleklerin Vücut Hareketi Konforunun Değerlendirilmesi

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BODY MOVEMENT COMFORT PERFORMANCES OF SHIRTS INTENDED FOR BELLIED MALES

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ABSTRACT: In this study, body movement comfort performances of three different classical male shirts intended for bellied males were examined through wear trials that were performed on a group of ten subjects. The fitting of the shirts to the body and their comfort during movement were separately analyzed thanks to the wear trials. At the end of the study, it was recommended to use the belly size concept in the production of classical shirts intended for males.

Keywords: Clothing comfort, body movement comfort, subjective wear trials, classical male shirt.

GÖBEKLİ ERKEK BİREYLERE YÖNELİK OLARAK HAZIRLANAN GÖMLEKLERİN VÜCUT HAREKETİ KONFORUNUN DEĞERLENDİRİLMESİ

ÖZET: Bu çalışmada, göbekli erkek bireylere yönelik olarak geliştirilmiş olan üç farklı klasik erkek gömleğinin vücut hareketi konfor performansları on kişilik bir grup üzerinde gerçekleştirilen giyim denemeleri ile değerlendirilmiştir. Giyim denemeleri sayesinde gömleklerin bedene uyumları ve hareket esnasındaki rahatlıkları ayrı ayrı incelenmiştir. Çalışmanın sonunda, erkek bireylere yönelik klasik gömleklerin üretiminde göbek ölçüsü kavramının kullanılması önerilmektedir.

Anahtar Kelimeler: Giyim konforu, Vücut hareketi konforu, Subjektif giyim denemeleri, Klasik erkek gömleği.

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1. INTRODUCTION

Clothing comfort can be described as that a person feels physiologically, psychologically and physically balanced and satisfied in those clothes and under the current environmental conditions [1, 2]. In other words, all of the functions (which the clothes provide), ease of movement to the wearer without evoking any physiological and psychological effect, that they act as a thermo-regulation system against the change of ambient temperature, and that they make the person psychologically happy with their appearance, aesthetic and handle properties can be defined as clothing comfort. The researches regarding this subject are important in order to improve the life standards of people [3]. Today, clothing comfort is an important factor in the stage where people make their clothing selections.

Clothing comfort is divided into the sub-components of thermal comfort, sensory comfort, body movement comfort and psychological (aesthetical) comfort [4]. Body movement comfort, which is the subject of this study, has an important place among the comfort components. The person wants to move easily inside the clothing [5]. Regarding the clothing comfort, it is very important for the clothing not to prevent the body movements and to adapt to these movements [6]. This is possible by preparing garment patterns according to the body.

The fact that the person, who prepares the pattern, knows the body he/she will clothe increases his/her success in preparation of the pattern. If the body problems are known, these faults can be hidden through the changes on the model. Body and shoulder postures of male bodies are the basic and most effective characteristics for preparation of the pattern. There are four types of male bodies as straight, normal, lean and bellied [7]. Bellied bodies are emphasized within the scope of this study. The body movement comfort performances of three different classical shirts intended for bellied individuals were examined through wear trials that were performed on a group of ten subjects.

Although wear trials are costly and difficult to implement, they are effective methods to determine at what rate the measurement on the comfort performance of a fabric or clothes reflects the truth [8, 9]. Various studies on the subject are given as follows.

Choi and Ashdown (2002) developed clothes intended for the farmers that picked pears in Naju city in Korea in their studies. In the first stage of the study, field researches, interviews and surveys were made regarding both female and male farmers. The survey study was performed on 113 people (42 females, 71 males). In accordance with the survey results, 4 prototype samples consisting of jacket and trousers intended for females were developed. The aim was to improve the working performance and clothing comfort of the workers while developing the samples. At the end of the study, the samples were subjected to wear trials, and were reviewed by the female workers and experts in terms of being fit, functionality and aesthetics, and they tried to find the optimum clothes [10].

Schofield et. al. (2006) examined the relationship between body types, sizing and pattern shape of the trousers for women aged 55 and older. They tested and compared the trousers with two different fitting types on 176 subjects. At the end of the study, they underlined the complexity of fit, and sizing subsets were suggested for providing good fit of mature women [11].

Ho et. al. (2008) tested 8 sports outfits on 14 pregnant women with age 32.3±4.2. Within the study, the thermo-physiologic, tactile and body movement comfort of the clothes were examined. At the end of the wear trials, it was stated that the clothing types and models affected the body movement comfort [9].

Çivitci and Çakmak (2009) performed wear trials on 24 subjects in order to examine the effect of fabric structures with surface flex capacity and different fiber construction of female trousers on the model and pattern design. Within the study, 6 different fabric types were examined and it was stated that the patterns must be revised according to the elastane fiber rate of the fabrics [12].

Komarkova and Glombikova (2013) studied the effect of the anatomical changes during pregnancy on the pattern design of the maternity wear. Accordingly,

they measured the body sizes of the pregnant women at the beginning of their pregnancy and in 36th and 41st weeks, and then, they worked to develop one blouse and one trousers pattern. At the end of the study, they developed patterns in compatibility with the body form of pregnant women [13].

In another study, the researchers aimed to benefit from artificial neural networks techniques in order to contribute to the body movement comfort of clothes. Hu et. al. (2009) tried to develop a system that helps by benefiting from artificial neural networks in computer-aided design systems during the preparation of clothing pattern in order to estimate the fitting of the clothes to the body and to determine the optimum measures of the clothes. In line with this objective, they analyzed 450 trousers, performed wear trials and built a three-layer artificial neural network. The data obtained from 400 trousers were used as the training set data, and the data obtained from 50 trousers were used as the testing set data. In building the network, the hip girth, trousers length, total angle of inside leg seams, waist fossa, front crotch, back width on hipline values obtained from the wear trials were used as input dataset, and the fitting of the clothes to the body was used as output dataset. At the end of the study, the researchers stated that the network was not adequate to obtain the required things, but that it was important to include the estimation of the fitting of clothes to the body through artificial neural networks and the determination of the optimum measures of clothes in the computer-aided pattern systems in terms of developing the two- and three-dimensional image of the clothes belonging to the pattern [14].

In this study, body movement comfort performances of three different classical male shirts intended for bellied males were examined through wear trials that were performed on a group of ten subjects. The fitting of the shirts to the body and their comfort during movement were separately analyzed thanks to the wear trials.

2. MATERIALS AND METHOD

The shirts were produced from patterns prepared in three different ways based on 10 bellied male study subjects. These subjects were all volunteers, and attended wear trials.

The subjects that took part in the wear trials were people between 45 and 55 ages who wore size 52. The chest measurement of these subjects was 104 ± 2 cm, their belly girth was 110 ± 3 cm and their height was between 165 and 170 cm.

The model of the shirts utilized within the study can be seen in Figure 1.

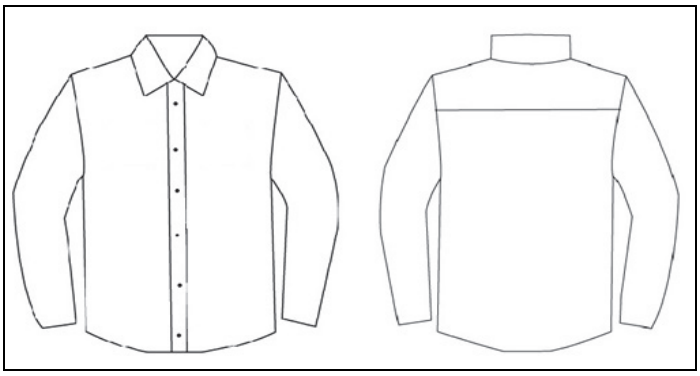

Figure 1. Classical male shirt model (front and back view)

In the process of pattern preparation of shirts, firstly the basic body patterns were prepared, and then, the related points were left as the margin for looseness. The basic shirt patterns were prepared based on the standard size chart, which is used when preparing clothing patterns intended for males in size 52 according to Muller patterning technique (Table 1). The basic patterns of the front and back part, collar and back yoke of the shirt are shown in Figure 2.

Table 1. Size table [15]

Measurements (cm)	Size 52
Chest girth	104
Neck girth	44
Armhole girth	16
Shoulder width	17,5
Armhole depth	24,5
Back length	44
Front length	42
Shirt length	75
Back collar	7,3
Arm length	65
Wrist girth	20

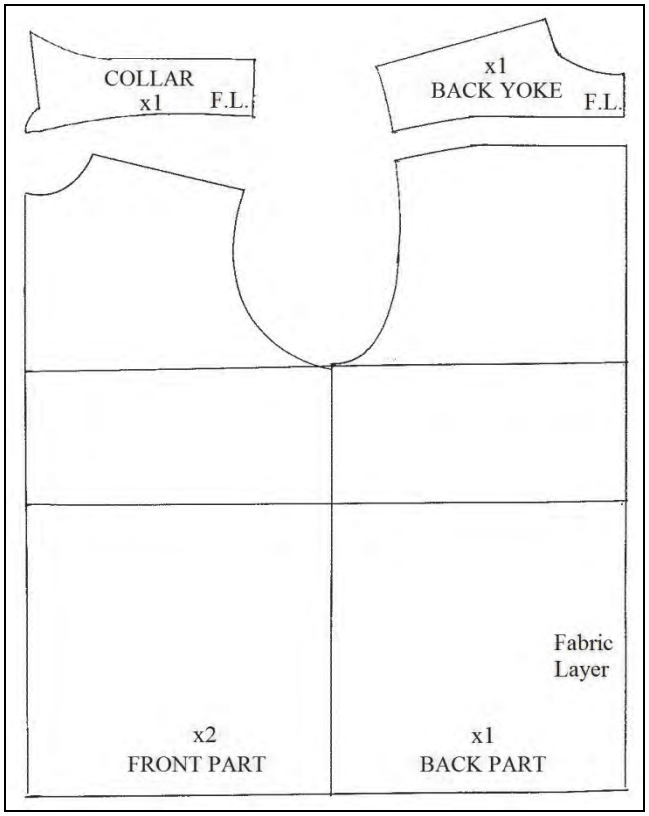

Figure 2. The basic patterns of the shirt

Within the scope of this study, three different shirts were produced considering the belly areas of bellied individuals. The patterns of the shirts were prepared by leaving an equal margin for looseness on three different points on the basic patterns of classical male shirts. 1.5 cm of margin for looseness was left on the side seams on the first shirt pattern, on the front plackets on the second shirt pattern, and on the center back on the third shirt pattern. The changes on the patterns can be seen in Figure 3. While the shirts were symmetrical, the patterns were prepared on half size, so, totally 3 cm of margin for looseness were left on all the shirts.

The values of the yarns of the woven fabric, used in the production of shirts, are given in Table 2.

The fabric was woven on a dobby weaving loom in plain structure. It was subjected to the commercial finishes used in the market. The weight and thickness values, numbers of warp and weft yarns per unit area, warp elongation, weft elongation and the codes of warp and weft yarns are shown in Table 3.

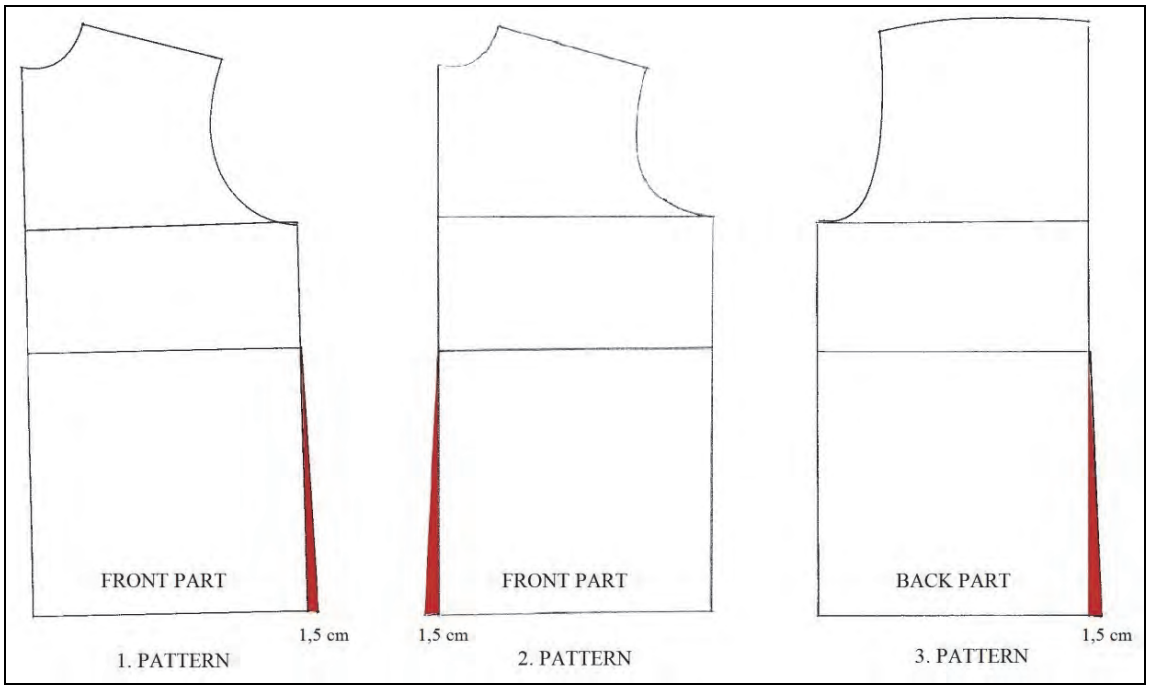

Figure 3. Drawings of the patterns of the shirts

Table 2. Technical data of the warp and weft yarns of the fabric

Yarn code	Used place	Yarn count (Nm)	Raw material	Twist coefficient (αe)	Direction of twist
Dİ-1	Warp	20/1, ring	% 100 Cotton	3.7	Z
Dİ-2	Weft	20/1, ring	% 100 Cotton	4.0	Z

Table 3. Technical data of the fabric

Fabric code	Weight (g/m²)	Thickness (mm)	Warp density (warp/cm)	Weft density (weft/cm)	Warp elongation (%)	Weft elongation (%)	Code of warp yarn	Code of weft yarn
D1	104	0.585	25	16	11.85	28.48	Dİ-1	Dİ-2

Specifications of the fabrics were determined according to the following standards; TS EN 12127 for the weights, TS 7128 EN ISO 5084 for the thicknesses, and ASTM D5034-09 for the warp and weft elongations.

In the initial stage of the study, one classical male shirt was produced based on the standard size chart of size 52. When the voluntary subjects wore this shirt, it was observed that they were having difficulty or could not button up the shirt at all on their belly area. At that time, the subjects were interviewed and it was confirmed that they had to prefer the shirts size 54 or bigger as they were bellied although their chest size was 52. From this point of view, within this study, the basic patterns of classical male shirt size 52 were modified by leaving a margin for looseness on 3 different points considering the belly areas of bellied males, and 3 shirts were produced out of these patterns. These shirts were subjected to wear trials on 10 subjects respectively, and the fitting of the shirts to the body and their comfort during movement were separately analyzed, and finally, comparative analyses were performed utilizing the statistical techniques. Ethical permission for subjective wear trial tests was obtained from Pamukkale University, Faculty of Medicine (Document date: 24.09.2013 and committee number: 13).

The parameters researched in wear trials are given in Table 4. The parameters analyzed during wear trials were reviewed by a specialist along with the wearer.

Table 4. The parameters researched in wear trials

Compatibility of the shirt sizes with the body	
y1	Shoulder width
y2	Chest girth
y3	Hem width
y4	Back width
y5	Belly girth
y6	Armhole girth
y7	Shirt length
Compatibility of the shirt during movement	
y8	Dressing/undressing
y9	Arm movement comfort (front, side, back)
y10	Status of the belly
y11	Stoop and lateral bending
y12	General aesthetical appearance

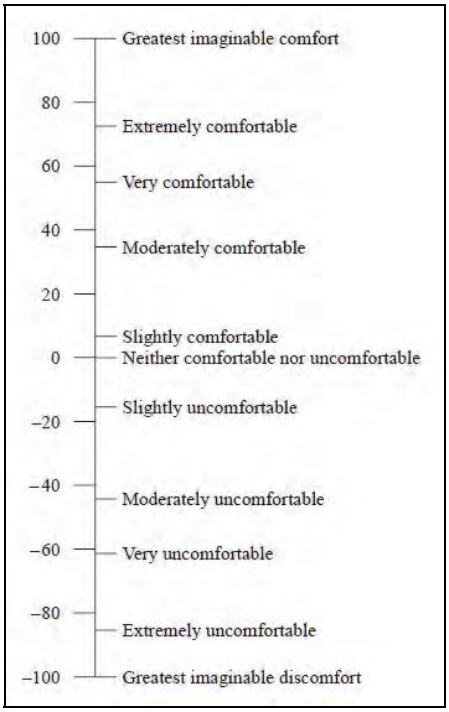

Figure 4. CALM scale [16,17]

The parameters researched in wear trials were reviewed by using CALM scale which is shown in Figure 4. With this scale, the comfort or discomfort level, which is personally experienced, can be shown by simply marking any point on the line (16, 17). CALM scale is often preferred in literature as it is simple to use.

The atmospheric variables were kept under standard conditions of 20 ± 2°C temperature and 65% ± 5 relative humidity for all wear trials.

The data obtained at the end of wear trials were analyzed by utilizing the SPSS 22.0 statistical package software. Within the scope of this study, among the statistical techniques Levene, One-way Analysis of Variance (ANOVA), Regression Analysis, Kruskal Wallis H and Kendall's Tau-b correlation coefficient Test techniques were respectively used. In addition to these techniques, two different post-hoc tests were used within One-way Analysis of Variance (ANOVA) Test.

As it is known, if there is a difference between the variables, post-hoc tests can be used in order to define the relationship between the parameters. Post-hoc statistical tests should bring a consistent and appropriate approach to researches. An incorrect post-hoc test would make a bias and errors in a research. Homogeneous properties of the variance and equality of the sample size properties are important for selection of post-hoc tests [18].

In this study, sample sizes were equal. Tukey HSD multiple comparison post-hoc test was conducted in the cases that the variances were homogeneous, and Games-Howell multiple comparison post-hoc test was conducted in the cases that the variances were not homogeneous.

3. RESULTS AND DISCUSSION

Within the scope of this study, normality test was performed to see whether data sets were in normal distribution or not. The results are given in Appendix 1. It was observed that the data sets showed normal distribution generally; on the other hand some values did not fit in normal distribution. Parametric and non-parametric statistical test results were used, in this case.

Levene and One-way Analysis of Variance (ANOVA) Tests

In the study, Levene Test was primarily performed in order to test the variance homogeneity. According to test, H0 hypothesis affirmed that the values of the stated scale parameter were homogeneous and H1 hypothesis affirmed that the values of the stated scale parameter were not homogeneous.

And then, ANOVA test was performed on independent variables. According to test, H0 hypothesis affirmed that there was no difference between the shirts in terms of stated parameter. H1 hypothesis affirmed that there were differences between the shirts in terms of stated parameter.

The significance value (p) within the study was acknowledged as 0.1. If significance value (p) of a parameter was higher than 0.1 ($p > 0.1$), it was interpreted that the hypotheses of H0 was accepted. If it was lower ($p < 0.1$), H1 was accepted.

The results of Levene and ANOVA tests of the data obtained at the end of wear trials are shown in Table 5.

Table 5. The results of Levene and ANOVA tests

Variables	Levene Test			One way ANOVA		
	F	p	Variance homogeneity status	F	p	Hypothesis status
y1	4,217	0,025	Not homogeneous	5,278	0,012	H1 accepted
y2	0,875	0,428	Homogeneous	2,693	0,086	H1 accepted
y3	3,861	0,034	Not homogeneous	2,661	0,088	H1 accepted
y4	0,368	0,696	Homogeneous	3,075	0,063	H1 accepted
y5	0,736	0,488	Homogeneous	0,981	0,388	H0 accepted
y6	4,257	0,025	Not homogeneous	1,029	0,371	H0 accepted
y7	2,659	0,088	Not homogeneous	1,800	0,185	H0 accepted
y8	0,783	0,467	Homogeneous	0,977	0,390	H0 accepted
y9	1,318	0,284	Homogeneous	0,585	0,564	H0 accepted
y10	5,153	0,013	Not homogeneous	1,368	0,272	H0 accepted
y11	5,839	0,008	Not homogeneous	1,433	0,256	H0 accepted
y12	4,582	0,019	Not homogeneous	5,240	0,012	H1 accepted

According to ANOVA test there was no statistical difference between the shirts in terms of y5, y6, y7, y8, y9, y10 and y11 parameters. However, in terms of y1, y2, y3, y4 and y12 parameters there were statistical differences between the shirts.

According to Levene test results, the values regarding the compatibility of chest width (y2) and back width (y4) measures with body are homogeneous. According to Tukey HSD multiple comparison test, which was performed on the values regarding the compatibility of chest and back width measures with body (y2, y4) after the ANOVA test, while the shirt 1 (looseness on the side seams) and shirt 2 (looseness on the front plackets) formed one group, the shirts 1 (looseness on the side seams) and 3 (looseness on the center back) formed another group. In other words, there was no statistically significant difference between the shirts 1 and 2, also between the shirts 1 and 3 according to chest and back width.

According to Levene test results, the values regarding the compatibility of shoulder width (y1), hem width (y3) measures with the body and general aesthetical appearance (y12) variables were not homogeneous. According to Games-Howell multiple comparison test, there was a significant difference between compatibility of the shoulder width (y1) of shirt 3 (looseness on the center back) and shirts 1 (looseness on the side seams), 2 (looseness on the front plackets). There was a significant difference between compatibility of the hem width (y3) of shirts 2 (looseness on the front plackets) and 3 (looseness on the center back). Finally, there was a significant difference between general aesthetical appearance (y12) of shirts 2 (looseness on the front plackets) and 3 (looseness on the center back), too.

Kruskal-Wallis H Test

The results of Kruskal-Wallis H test of the data obtained at the end of wear trials are shown in Figure 5. The results of this test were similar with the results of ANOVA test. According to Kruskal-Wallis H test, in terms of y1, y2, y3, y4 and y12 parameters there were statistical difference between the shirts, too.

The results, which were observed according to the pairwise comparisons of Kruskal-Wallis H test, were as followings; firstly there were significant differences between compatibility of shoulder width parameter (y1) of shirts 2 and 3, and also shirts 1 and 3. Secondly, there was a significant difference between compatibility of chest girth parameter (y2) of shirts 2 and 3. Thirdly, there was a significant difference between compatibility of hem width parameter (y3) of shirts 2 and 3. In addition, there was a significant difference between compatibility of back width parameter (y4) of shirts 2 and 3. Lastly, there was a significant difference between compatibility of general aesthetical appearance parameter (y12) of shirts 2 and 3.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of y1 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,010	Reject the null hypothesis.
2	The distribution of y2 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,087	Reject the null hypothesis.
3	The distribution of y3 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,083	Reject the null hypothesis.
4	The distribution of y4 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,027	Reject the null hypothesis.
5	The distribution of y5 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,239	Retain the null hypothesis.
6	The distribution of y6 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,342	Retain the null hypothesis.
7	The distribution of y7 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,145	Retain the null hypothesis.
8	The distribution of y8 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,446	Retain the null hypothesis.
9	The distribution of y9 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,496	Retain the null hypothesis.
10	The distribution of y10 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,437	Retain the null hypothesis.
11	The distribution of y11 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,215	Retain the null hypothesis.
12	The distribution of y12 is the same across categories of type.	Independent-Samples Kruskal-Wallis Test	,015	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,10.

Figure 5. The results of Kruskal-Wallis H test

Kendall's Tau-b Correlation Coefficient

Within the study, Kendall's Tau-b correlation coefficient was researched in order to observe if there was a correlation between the evaluations of volunteers for each shirt. It was observed that there were correlations in terms of y2, y7, y8, y9, y11, y12 parameters. The averages and standard deviations of subjective evaluations of the shirts are shown in Table 6.

Table 6. The averages and standard deviations of subjective evaluation of the shirts

Parameters	1. Shirt		2. Shirt		3. Shirt	
	Av.	Std.d.	Av.	Std.d.	Av.	Std.d.
y2	83	8	79	9	87	6
y7	76	19	67	14	80	13
y8	78	9	80	10	84	8
y9	82	6	79	13	84	10
y11	85	5	78	13	84	10
y12	83	12	78	8	90	6

At the end of the analyses, it was seen that Kendall's Tau-b correlation coefficient was 0.564 between shirts 1 and 3 according to chest girth parameter (y2) when the significant value was 0.05. It means that subjects made similar evaluations for y2 parameter in shirts 1 and 3.

It was observed that Kendall's Tau-b correlation coefficient was -0.650 between shirts 1 and 2 according to shirt length parameter (y7) when the significant value was 0.05. It means subjects made dissimilar evaluations for y7 parameter in shirts 1 and 2.

It was noted that Kendall's Tau-b correlation coefficient was 0.755 between shirts 1 and 2 according to dressing/undressing parameter (y8) when the significant value was 0.01. It means subjects were made parallel evaluations for y7 parameter in shirts 1 and 2. In addition, for same parameter, Kendall's Tau-b correlation coefficient was 0.829 between shirts 2 and 3. In other words, evaluations were parallel for shirts 2 and 3.

It was observed that Kendall's Tau-b correlation coefficient was 0.640 between shirts 1 and 2 according to arm movement comfort parameter (y9) when the significant value was 0.05It means subjects were made similar evaluations for y9 parameter in shirts 1 and 2.

It was seen that Kendall's Tau-b correlation coefficient was 0.772 between shirts 2 and 3 according to stoop and lateral bending parameter (y11) when the significant value was 0.01. It means subjects made similar evaluations for y11 parameter in shirts 2 and 3.

On the other hand, it was observed that Kendall's Tau-b correlation coefficient was -0.774 between shirts 1 and 3 according to general aesthetical appearance parameter (y12) when the significant value was 0.01. It means subjects made dissimilar evaluations for y12 parameter in shirts 1 and 3. Finally, according to same parameter Kendall's Tau-b correlation coefficient was 0.516 between shirts 2 and 3. In other words, evaluations were parallel for shirts 2 and 3.

Regression Analysis

Within the study, simple linear regression analyses were made in order to determine if there is a relationship between the parameters related to the belly size and the fitting of the shirt to the body during movement. At the end of regression analyses, it was observed that belly size had an effect on the arm movement, stoop and lateral bending. The results of the regression analysis that shows the effect of belly size on the arm movement are shown in Table 7 and 8.

Table 7. The results of the regression analysis that shows the effect of belly size on the arm movement comfort

Source	Sum of Squares	df	Mean Square	F	Sig.
Belly girth	988,092	1	988,092	13,700	0,001

R^2 = 0,329 (Adjusted R^2 = 0,305)

Table 8. The results of the regression analysis that shows the effect of belly size on the arm movement comfort

Parameter	B	Std. Error	t	Sig.
Intercept	250,130	45,585	5,487	0,000
Belly girth	-1,559	0,421	-3,701	0,001

The equation (1) obtained at the end of regression analysis is given as follows.

$\hat{y}$ = 250,130-1,559.x

Here; $\hat{y}$ = arm movement comfort (%)
x = belly girth (cm).

The equation can be interpreted as follows: if the belly size increases by 1 cm, it decreases the arm

movement comfort of the person for approximately 1.559%.

The results of the regression analysis, which show the effect of belly size on stoop and lateral bending, are shown in Table 9 and 10.

Table 9. The results of the regression analysis that shows the effect of belly size on stoop and lateral bending

Source	Sum of Squares	df	Mean Square	F	Sig.
Belly girth	540,710	1	540,710	6,190	0,019

R^2 = 0,181 (Adjusted R^2 = 0,152)

Table 10. The results of the regression analysis that shows the effect of belly size on stoop and lateral bending

Parameter	B	Std. Error	t	Sig
Intercept	207,077	50,169	4,128	0,000
Belly girth	-1,153	0,463	-2,488	0,019

The equation (2) obtained at the end of regression analysis is given as follows.

$$\hat{y} = 207{,}077 - 1{,}553.x \quad (2)$$

Here; $\hat{y}$ = stoop and lateral bending
x = belly girth (cm).

The equation can be interpreted as follows: if the belly size increases by 1 cm, it decreases the stoop and lateral bending comfort of the person for approximately 1.553%.

4. CONCLUSIONS

Within the scope of this study, three different shirts were produced considering the belly areas of bellied individuals. It was observed that there were statistically significant differences between the shirts in terms of shoulder width (y1), chest width (y2), hem width (y3), back width (y4) and general aesthetical appearance (y12) parameters. While examining the values of these parameters, it was found that third shirt, which has looseness on the center back, had better results than the other shirts.

Furthermore, when the fitting of classical male shirt to the body for bellied individuals was analyzed, it was observed that the belly size had an effect on the arm movement, stoop and lateral bending.

In practice, while it is observed that the drop system, which is a subgroup classification system, is used in production of male jacket and trousers, it is not observed in shirts. As a result of this study, it is recommended to use the belly size concept in the production of classical shirts intended for males. Later on the study, it is planned to determine the limits of belly size by making comprehensive researches.

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APPENDIX 1

The results of normality test

Tests of Normality							
	Shirt number	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
y1	1	,221	10	,181	,873	10	,110
	2	,164	10	,200*	,947	10	,629
	3	,302	10	,010	,781	10	,008
y2	1	,230	10	,144	,845	10	,051
	2	,143	10	,200*	,934	10	,487
	3	,295	10	,014	,873	10	,108
y3	1	,223	10	,174	,884	10	,147
	2	,153	10	,200*	,940	10	,557
	3	,254	10	,067	,872	10	,106
y4	1	,265	10	,044	,899	10	,213
	2	,221	10	,182	,938	10	,528
	3	,277	10	,029	,845	10	,050
y5	1	,324	10	,004	,720	10	,002
	2	,284	10	,022	,777	10	,008
	3	,217	10	,199	,875	10	,116
y6	1	,288	10	,019	,844	10	,049
	2	,289	10	,018	,790	10	,011
	3	,247	10	,084	,910	10	,283
y7	1	,236	10	,121	,823	10	,028
	2	,219	10	,190	,872	10	,106
	3	,200	10	,200*	,928	10	,425
y8	1	,300	10	,011	,734	10	,002
	2	,157	10	,200*	,914	10	,307
	3	,276	10	,030	,784	10	,009
y9	1	,205	10	,200*	,929	10	,436
	2	,330	10	,003	,780	10	,008
	3	,240	10	,107	,893	10	,184
y10	1	,224	10	,168	,787	10	,010
	2	,271	10	,036	,834	10	,037
	3	,230	10	,143	,859	10	,073
y11	1	,300	10	,011	,841	10	,045
	2	,300	10	,011	,808	10	,018
	3	,427	10	,000	,655	10	,000
y12	1	,250	10	,077	,866	10	,091
	2	,230	10	,144	,947	10	,638
	3	,307	10	,008	,797	10	,014