

The Study on the Loose and Pressure Comfort of Fit Blouse

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Abstract

From the loose of fit blouse, the paper analyzes the main factors influencing the sense of pressure comfort. Selecting white fabric makes the same style and different loose of fit blouse. Selecting 12 in 19 to 24 years old young women, whose figure are more in line with 160/84A body, evaluate the beauty and comfort under static and dynamic.

Keywords: fit blouse, loose volume, comfort, clothing pressure

With the development of society, improvement of living standards, as well as the change of living attitude, modern women increasingly focus on their dress and effect. Not only do they desire to have beautiful clothing, they hope to meet their daily movement of life, and reflect the vitality of life. The clothing comfort depends on many factors, such as pine volume, physical and mechanical properties of the fabric, the body movements and gestures, the body structure. Any kind of clothing will give human pressure. It must take into account the amount of pressure that a people can withstand. Considering the various factors makes the combined effect the best, and will not exceed the tolerance range of the human body, bring a series of negative effects.

1. Garment Loose

Space between the clothing and the body, such as the relaxation degree, void content, amount of pine, are several ways to describe the clothing loose, but the specific meanings are different. The relaxation degree represents the ratio of the size of finished garments and the body. void content describe a straight line of the gap between the body surface and the inner surface of the garment^[1]. Currently, from the size, the loose quantity represents the difference between clothing finished size and body size. from the area, the loose quantity describe projection surface between clothing and the body, which is proportional to the gap amount^[2].

From the constitution of the total amount of loose, it is divided into three types: static relaxation volume, dynamic relaxation volume, the relaxation amount of the modeling^[3]. The basic amount of ease and relaxation, including static and dynamic relaxation volume, are used to meet the body's normal breathing, the demand for daily exercise, directly interfere with the wearing comfort and sports functional. The relaxation amount of the modeling concerns the beauty of clothing, the size is based on the clothing consumer demands^[4]. From the constitution of perspective three-dimensional, ease is divided into the amount of length, circumference and angles ease three types^[5]. There is no loose volume isolated, thus during the costume design, function and styling needs should be considered.

2. Garment Pressure Comfort

At present, for comfort, people's understanding vary widely. Real comfort only exists in no discomfort factors. No matter what the season and environment is, the clothing can give people easy, natural, comfortable feel, easy to human activities, and to prevent excessive loss of body heat and prevent the adverse Climate effects on humans. This is costume wearing comfort. Clothing comfort, from the perspective of physiology and hygiene, researches the scientific relation between the clothing fabric, clothing and physiological phenomena, environment. According to the point of the physiological hygiene to guide the design and manufacture, can ensure that people have a wearing comfort.

Clothing comfort involves many aspects, such as psychology, hygiene, aesthetics, sociology, etc., describes the characteristics for comfort after wearing, which covers several areas: thermal and moisture comfort, tactile comfort, pressure sensitive comfort and movement comfort. Human - clothing - environment is an organic whole by the study of clothing ergonomics. To some extent, overall balance between the three will affect the clothing comfort. There are factors that affect comfort, that are human factor, clothing factors, environmental factors^[6]. Human factors include personal health, metabolism, clothing preferences, living conditions, emotions. Clothing factors include insulation, moisture resistance, mechanical properties and apparel fabrics. Environmental factors contains the rate of gas flow, temperature, humidity, radiation, temperature, etc. .

3. Comfort Experiment

3.1 Sample

In experiment the style of fit blouse is a classic shirt style. Fabric with white cotton cloth, is made of five same style, different size blouse, shown in Figure 1.



Figure 1: Fit Blouse

In actual production, basing on the height and net bust, making fuzzy judgment based on the contouring of fashion drawing, the percentage of control site plus a certain relaxation amount makes garment specifications. In experiment, each detail size of fit blouse is sized according to Table 1^[7].

Table 1: Fit Blouse Detail Specification Unit: cm

Sample No.	Bust	Waist	Hip	Sleeve height
F1	90	72	92	16
F2	92	74	94	16
F3	94	78	94	14
F4	96	80	96	14
F5	98	82	98	14
F6	100	88	98	12

3.2 Test Object

Selecting 12 in 100 aged 19 to 24 years old young women, whose figure are more in line with 160/84A body, try on experiment sample. The basic data are shown in Table 2.

Table 2: The Basic Data of Test Objects

	Age	Height/cm	Weight/kg	Bust /cm	Waist /cm	Hip /cm	Shoulder /cm	Wrist /cm	Back length/cm
Min	22	158	45	83	59	83	34.5	13.5	37
Max	24	162	54	85	71	94	44	15.5	43
Average	22.83	160.5	49.25	83.67	64.5	87.46	37.96	14.48	40.75
standard deviation	0.7177	1.5076	3.137	0.8876	3.5612	2.2992	2.7754	0.5864	1.9247

3.3 Comfort Evaluation Experiment

We do experiments at constant temperature and humidity laboratory. Comfort subjective evaluation uses the 5 interval scale of Hollies. We can divide the comfort and beauty into different degree, and respectively express them as numbers 1, 2,3,4,5. In experiment, the state of wearing clothing includes a stationary state and the dynamic state. Considering the difficulty of the pressure-sensitive comfort evaluation in different parts, we make a whole evaluation only for the comfort of the press of the specific state of operation, and do not individually carry out the evaluation of each site.

Experimental action select common actions everyday after dress, that is, torso bent forward 45 °, arms folded arms, lift arms forward 45 °, lift arms forward 90 °, one arm forward and the other backward, one arm lateral raise 45 °, one arm lateral raise 90 °, arms lateral raise 45 °, arms lateral raise 90 °, open arms backward [8].

At the beginning of the experiment, the person who charge the experiment is responsible for the test object, who will try on the experiment sample, to explain the subjective evaluation scales, subjective evaluation site and the evaluation state. After really understand the experimental requirements, the test object can try experiment sample in order. Then the experiment leader accurately record the experiment data when the test object as required do a prescribed action be tested as required. Be sure to maintain the data consistency with the movement.

4. Results and Analysis

4.1 Static Analysis

12 test objects tried experiment sample with the requirement of experiment. Statistics the comfort evaluation and beauty evaluation after dress under static state and dynamic state. Their average value are shown in Table 3. Using Origin software draw a comparing figure (see figure 2 and figure 3) for the comfort and beauty evaluation value under static state.

Table 3: The Average of Subjective Evaluation in Static

Sample No.	F1	F2	F3	F4	F5	F6
Shoulder	3.29	3.375	4.21	4.375	4.67	4.67
Back	3.83	3.83	4.67	4.71	4.71	4.92
Bust	3.79	4.17	4.75	4.75	4.92	5
Waist	4.21	4.58	4.88	4.92	4.92	5
Beauty	4.25	3.96	3.92	3.58	3.04	2.08

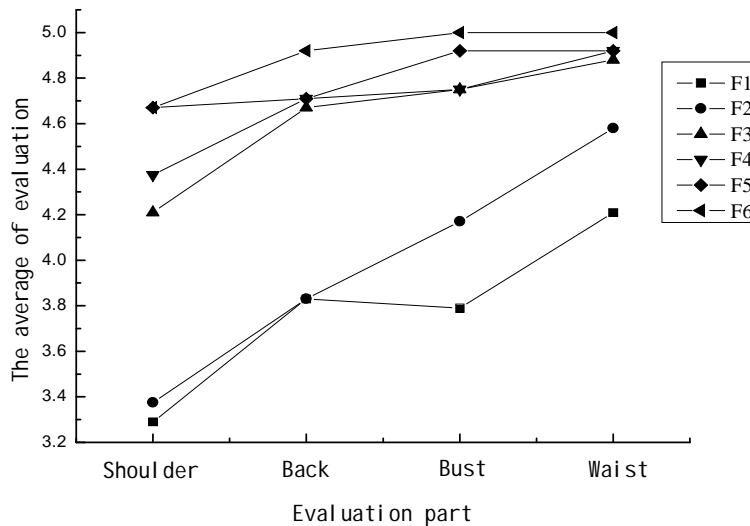


Figure 2: The Comparison of Static Pressure Evaluation Average

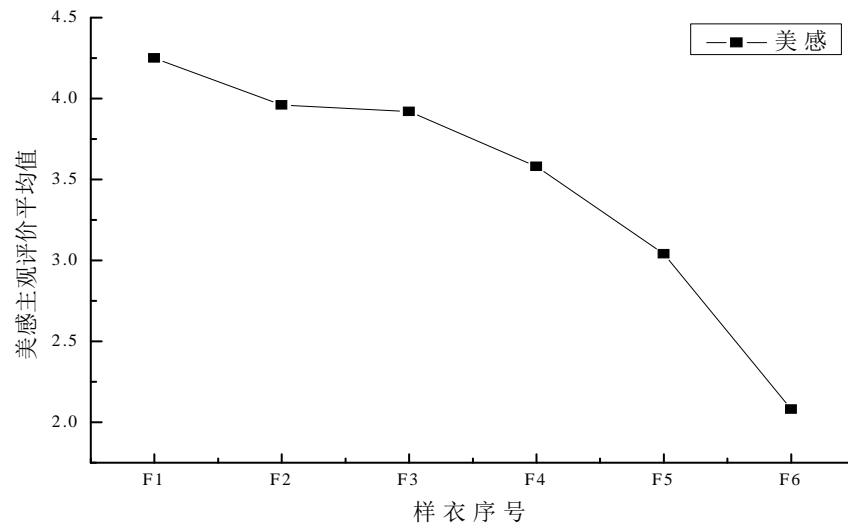


Figure 3: The Comparison of Static Beauty

As can be seen from Figure 3: shoulders back chest waist comfort evaluation from excellent to good in turn is: F6, F4, F3, F5, F2, F1. The shoulder evaluation for F5 and F6 is exactly the same. So it is with F1 and F2 for back, F4 and F5 for back, F3 and F4 for bust, F4 and F5 for waist. The differences in lifestyle will form a different style of clothing, so for the same piece of clothing the comfort evaluation people give is different. The ordinate in Figure 2 represents the average value of evaluation sum for all test object tried the same clothing in the same site evaluation, and the differences of evaluation for the same clothing part result in the same points in the figure. From Figure 3 we can see: the overall aesthetic evaluation from excellent to good in turn is: F1, F2, F3, F4, F5, F6. In addition to F6, the rest are beautiful. People for the evaluation of the aesthetic appearance are mostly static. Under the premise to meet the physiological breathing, thin is beautiful and the best appearance is F1. The results of comprehensive evaluation that all test object give are more in line with people's everyday dress habits. Generally consistent with the body external surface characteristics of clothing, meeting the physiological breathing, people think that thin is beautiful. The greater the amount of loose is, the more comfortable you will have. The static beauty evaluation of F1 is best, the comfort dress of F6 is best. Under a stationary state, for F6, in addition to the lowest evaluation of aesthetics, the rest of the evaluation indicators are close to 5, which indicate that the relaxation amount gives people the greatest comfort, but the beauty is less. For the remaining five kinds of clothing the evaluation are above 3, indicating that the five garments give people excellent comfort.

4.2 Dynamic Analysis

12 test objects tried experiment sample with the requirement of experiment. Statistics the comfort evaluation after dress under dynamic state. Their average value are shown in Table 4. Using Origin software draw a comparing figure (see figure 4) for the comfort evaluation value under dynamic state.

Table 4: The Average of Comfort Evaluation under Dynamic State

Action Code	Action Name	F1	F2	F3	F4	F5	F6
A	torso bent forward 45°	3.5	3.63	4.42	4.71	4.67	4.92
B	arms folded arms	2.08	2.21	3.54	3.71	4.29	4.96
C	lift arms forward 45°	2	2.25	3.63	4.13	4.17	4.88
D	lift arms forward 90°	1.38	1.42	2.33	2.96	3.21	4.42
E	one arm forward and the other backward	2.79	3.17	4.46	4.63	4.83	4.92
F	one arm lateral raise 45°	3.21	3.58	4.58	4.63	4.71	5
G	one arm lateral raise 90°	2.21	2.67	3.83	4.08	4.25	4.71
H	arms lateral raise 45°	3	3.33	4.67	4.79	4.79	5
I	arms lateral raise 90°	2.08	2.42	3.92	4.42	4.38	4.83
J	open arms backward	2.5	2.96	3.79	4.04	4.5	4.67

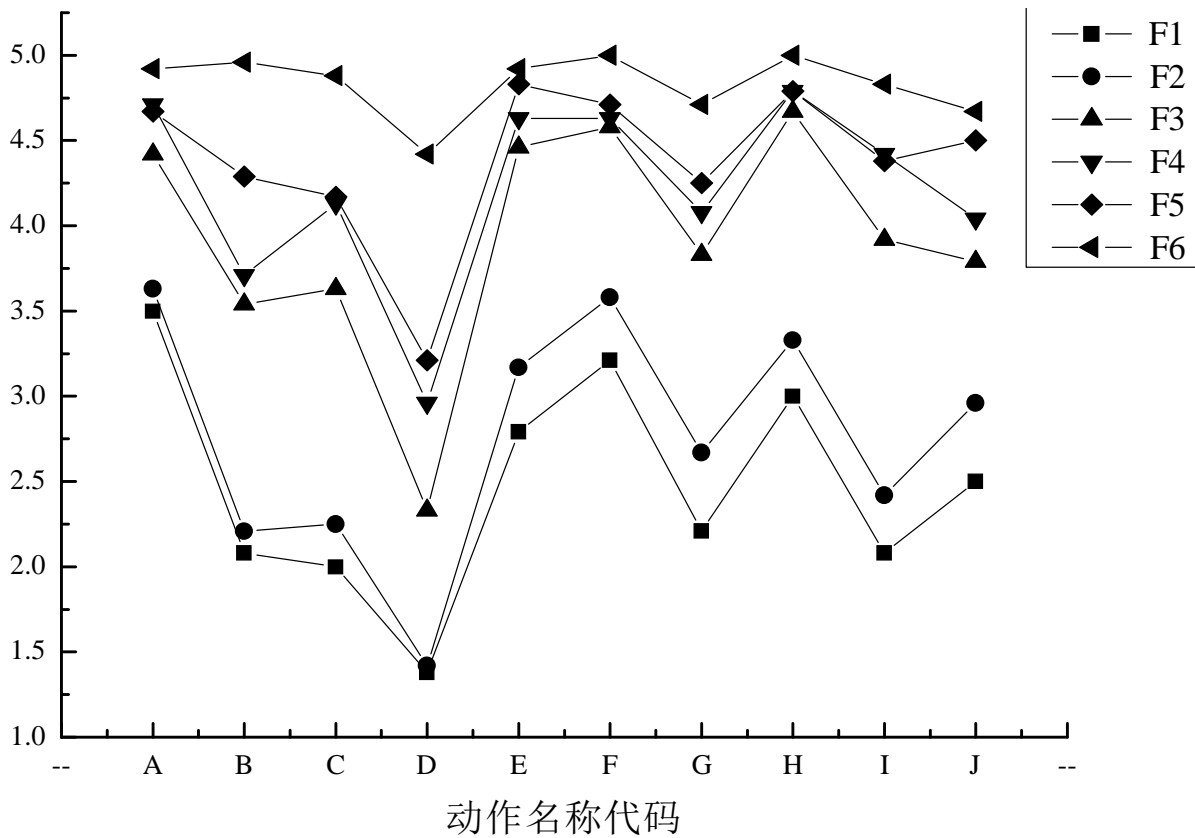


Figure 4: The Comparison of Comfort Evaluation Value under Dynamic State

As can be seen from Figure 4: the action of each dress is approximately the same trend of comfort evaluation, the comfort level from high to low in turn is F6, F5, F4, F3, F2, F1. This shows that when people are in daily exercise, the greater the amount of loose clothing, the more convenient they do activities. So it is not subject to any binding. But in combination with the chart you can see: ① for A, F, H, wearing the kind of clothes doesn't feel uncomfortable; ② for B, C, in addition to that F1, F2 are not comfortable, the rest kinds of clothing to wear are more comfortable; ③ for D, only F6 have a high evaluation of comfort, F5 general comfort, the rest uncomfortable; ④ for E, there is only uncomfortable to F1, F2 general comfort, the rest more comfortable; ⑤ for G, I, J, in addition to that F1, F2 are uncomfortable, the remaining are relatively comfortable. When people do exercise with different actions, it can mobilize different parts of the body. Because the movement of muscle, bone, joint do make corresponding changes in the body surface, the same piece of clothing in different movements, people's sense of pressure comfort have the difference. Such as: for F3, only in D it has the sense of comfortless, and the remaining actions are comfortable. F1 is comfort when doing A, F, H, the rest movements are not comfortable. For F6 doing these 10 action the comfort is very high. In short, with the increase in the amount of loose, the comfort that human do activities have increased. The comfort of F5 and F6 is far greater than F1 and F2, but the comfort of F3 and F4 is centered.

4.3 Comprehensive Analysis for the Pressure Comfort under Static and Dynamic

After checking the relevant information, combining with the weight distribution that experts give about subjective evaluation grade 3, 4, 5, it can be seen this three grades plays a role in the pressure comfort of fit blouse. Therefore, under normal circumstance, we can consider that as long as the degree of the pressure comfort under static state and dynamic state belong to these three evaluation level, we can think wearing fit blouse female don't feel uncomfortable in each pressure area, that is comfort. Well, the amount of loose corresponding to these three levels is comfort. Therefore, find out the the amount of loose corresponding to the level 3, 4, 5, for each evaluation of each action under the static state and dynamic state. Then apply the SPSS software to generate the box plots. Figure 5 shows the static state evaluation of each part, Figure 6 shows the beauty, Figure 7 shows the dynamic state evaluation.

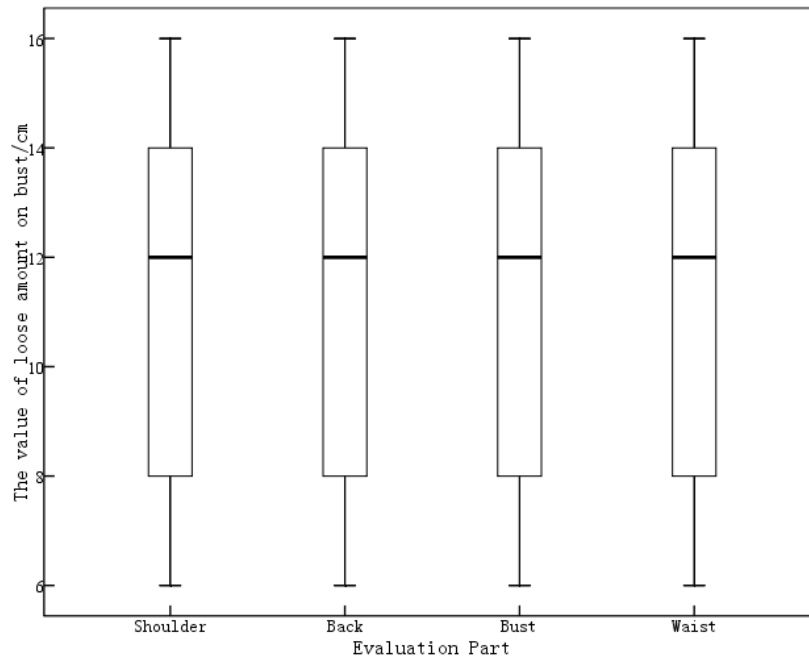


Figure 5: The Loose Corresponding to the Grades 3, 4, 5 of Subjective Assessment under Static State

Note: In the figure, the rectangular frame is the subject of the box plot. Each rectangular frame has three parallel. From top to bottom, respectively, one of them represents 75th, 50th, 25th percentile of the variable values. The middle longitudinal straight line is defined as the tentacles. The uppermost horizontal cutoff line is the maximum value of variable body. The lowermost horizontal cutoff line is the minimum value of variable body. Outside the variable body is the abnormal values and the extreme values.

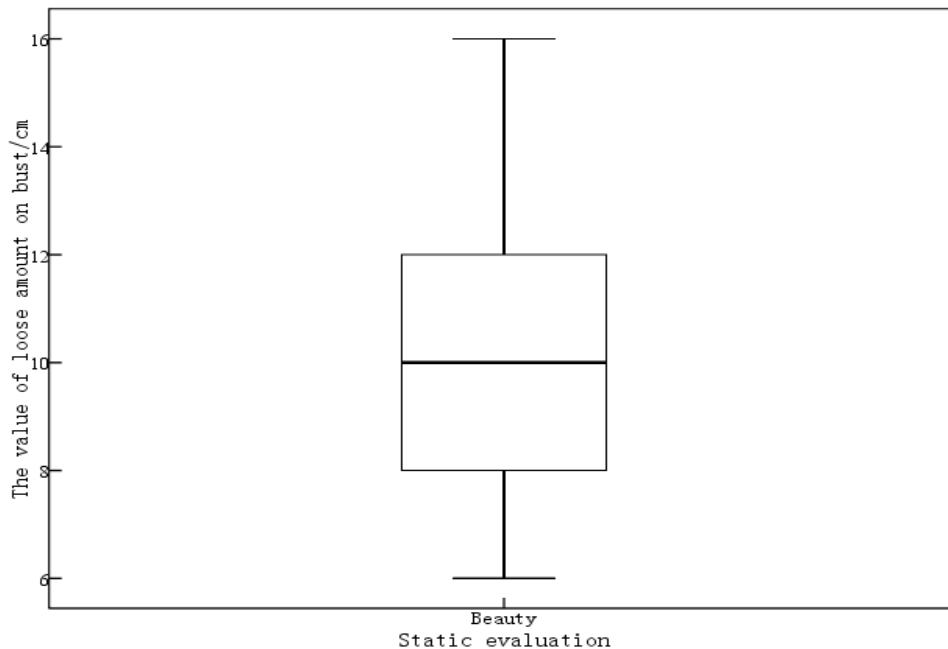


Figure 6: The Loose Corresponding to the grades 3, 4, 5 of Beauty Assessment under Static State

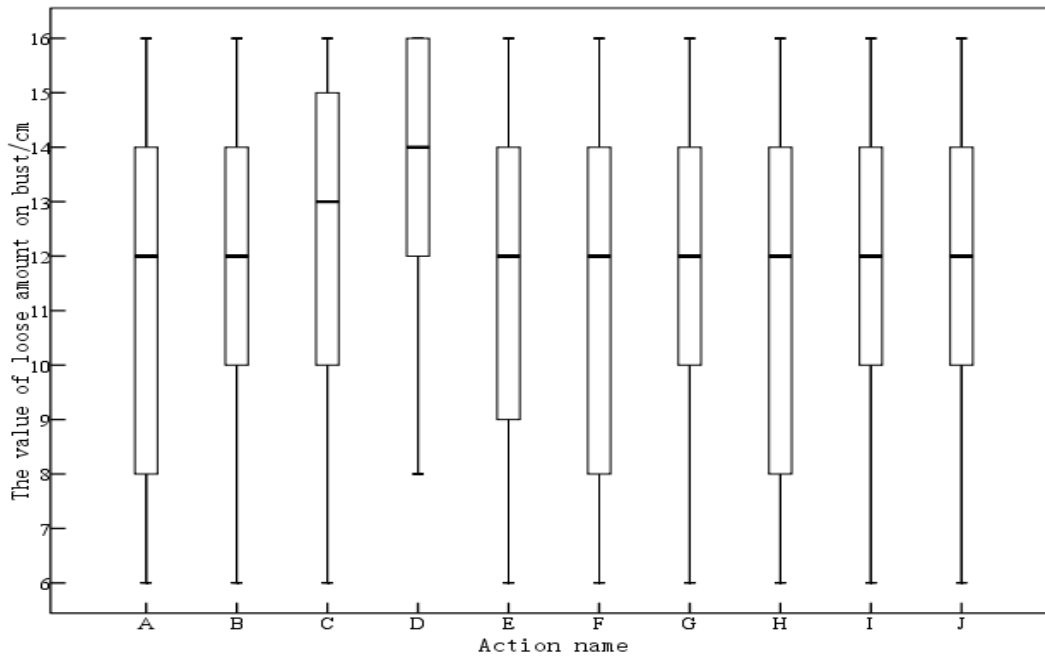


Figure 7: The Loose Corresponding to the Grades 3, 4, 5 of Subjective Assessment Under Dynamic State

The demand on the pressure comfort range of the clothing for the same type of crowd has a certain regularity, but the sense of pressure on the clothing is influenced by the interaction of many factors, as well as the difference of individuals in the same population, there are still a certain bias about the regularity of the clothing pressure comfort range. In order to make the range of the pressure comfort on the selected clothing having a wider representation, we select the values of loose (area shown in the rectangle), which is in the 25th to 75th percentile of Figure 5, Figure 6, Figure 7. That is to say, the area where the amount of loose under various states are more concentrated is the range of loose on clothing for fit blouse in static state and dynamic state. As can be seen from Figure 5: body in the static state, the range of loose more concentrated is 8 ~ 14 cm for the pressure sensitive evaluation of shoulder, back, chest, waist. The static relaxation volume contains the physiological amount and the level of clothing lies. The topic is fitting blouse, but inner clothing is only underwear and the thickness of seasonal clothing for women is not much difference. Therefore, the concentrated area of evaluation under static state is consistent. As can be seen from Figure 6: the range of loose more concentrated is 8 ~ 12 cm for the beauty sensitive evaluation. Women hold substantially the same point about dress appearance: on the basis of meeting the physical needs, the more fitted clothing is what women want to have. As can be seen from Figure 7: for A, F and H movement, the range of loose more concentrated is 8 ~ 14 cm for the pressure sensitive evaluation. For A, F and H movement, the magnitude of these activities for the body is 45° without causing a huge change in the surface morphological of the body. For B, G, I and J movement, the range of loose more concentrated is 10 ~ 14 cm for the pressure sensitive evaluation. For B, G, I and J movement, the magnitude of these motions for the body is great, the tensile deformation of body surface skin is the same as the the magnitude of these motions with a lot of displacement on muscle. For C movement, the range of loose more concentrated is 10 ~ 15 cm for the pressure sensitive evaluation. Lifting arms forward 45°, the back of the shoulder blade is stretching tight straight state. Arms stretch the muscles in the shoulder. For D movement, the range of loose more concentrated is 12 ~ 16 cm for the pressure sensitive evaluation. The minimum value of loose for D is 8 cm, the maximum value of loose is 16 cm which is equal to the value of the quartile. The change of the body surface is larger than C movement, while the loose zone of pressure comfort is smaller than C movement. For E movement, the displacement of the body surface occurs in the front and back of torso, the range of loose more concentrated is 9 ~ 14 cm for the pressure sensitive evaluation, and left and right arm exercise at the same time with the opposite direction.

5. Conclusions

- (1) Under static state, the comfort evaluation for shoulders back chest waist from excellent to good in turn is: F6, F4, F3, F5, F2, F1. The range of loose more concentrated is 8 ~ 14 cm for each part. The overall aesthetic evaluation from excellent to good in turn is: F1, F2, F3, F4, F5, F6, and the range of loose more concentrated is 8 ~ 12 cm.
- (2) The action of each dress is approximately the same trend of comfort evaluation, the comfort level from high to low in turn is F6, F5, F4, F3, F2, F1. For A, F and H movement, the range of loose more concentrated is 8 ~ 14 cm for the pressure sensitive evaluation. For B, G, I and J movement, it is 10 ~ 14 cm. For C movement, it is 10 ~ 15 cm. For D movement, it is 12 ~ 16 cm. The minimum value of loose for D is 8 cm, the maximum value of loose is 16 cm which is equal to the value of the quartile. For E movement, it is 9 ~ 14 cm.
- (3) The change of the body surface caused by the different movement is different, and the same to the range of loose amount more concentrated. The range of loose amount more concentrated in different movement is 12 ~ 14 cm.

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