

# Design of Functional Bellyband for Pregnant Women<sup>\*</sup>

Tian Wei<sup>\*</sup>, Qian Zhao, Xing Zhang

*Xi'an Polytechnic University, Xi'an 710048, China*

---

## Abstract

This study has investigated the physical characteristics and needs of pregnant women to introduce a scientific and practical design of bellyband to satisfy pregnant women demand. Structure and material of supporting bellyband have been introduced in the study and its functional rationality also has been verified by many testers. Finally, the experiment result has been proved that the design of supporting bellyband has helped pregnant women to ease the burden of their waist efficiently and effectively after analysed the result very carefully.

*Keywords:* Pregnant Women; Supporting Bellyband; Functionality; Comfort

---

## 1 Foreword

With the development of the apparel market, more and more work wear, casual wear, sportswear, nightclothes and other products for pregnant women have emerged; products have become very various for pregnant women. But current researches finds that maternity brands, maternity accessories have not to be developed. Such as, care cummerbunds, shoes, socks and so on. And those that can meet the functional needs of women during pregnancy are relatively lacking [1]. The author also found that many domestic and foreign scholars and businesses have done some work in development and research about products for pregnant women, but that is not enough, especially on supporting bellyband [2]. This study designs a more scientific and more practical supporting bellyband for pregnant women.

## 2 Analysis of Maternal Body Characteristics and Physiological Status

### (1) Pregnant Body Features:

During pregnancy, women will gain 12-15 kg's weight, the change of the size in abdominal girth can reach 20-25 cm [3]. Table 1 shows four size changes of pregnant women [4]. The bust size

---

<sup>\*</sup>This thesis is supported by the Art Key Construction Subjects of Xi'an Polytechnic University.

<sup>\*</sup>Corresponding author.

*Email address:* 569790315@qq.com (Tian Wei).

between 85-100 cm accounted for 76% of the total amount of individual samples; waist size in 77-97 cm between individual accounted for 78% of the total in the sample; abdominal circumference size between 92-112 cm accounted for 78% of the total amount of individual samples; hip size accounted for the total sample of 70% individuals in the 92-110 cm [5].

Table 1: Statistical results of representative dimensions of late pregnancy Unit: cm

	Minimum	Maximum	Average
Bust Circumference	80 cm	108 cm	94.14 cm
Waist Circumference	73 cm	116 cm	90.78 cm
Abdominal Circumference	84 cm	126 cm	103.86 cm
Hip Circumference	89 cm	119 cm	102.2 cm

These dimensions of pregnant women provide a reliable basis for the design.

(2) Analysis of physiological status of pregnant women:

The results of the statistics show, the increase in body weight and waist backache are the biggest physiological discomforts. The analysis of main symptoms of pregnant women in order to preventing back pain of pregnant women, is important and necessary in design [6].

## 3 Design Analysis

### 3.1 Design Research

Now there are many shops providing maternal and child products, mostly maternity or infant clothing as the main management category, but few abdominal underwear bellybands [6]. Supporting bellybands are not various. Most of all are transferring force of abdomen to the waist through the ribbon, intensifying the pain on waist.

In addition, the author had carried on an on-the-spot investigation in Xi'an. Research was carried on in the park, maternal and child stores and departments of gynecology and so on. So the questionnaire is pertinence.

According to the investigation by author, the existing bellybands don't meet people' needs occupying 75%. These show that existing bellybands are not able to make the majority of pregnant women satisfied. And also found that the popularity is relatively low. The 70% of the people participating in the investigation are not satisfied with the functionality, 55% of the people are not satisfied with the fit. Thus, functionality and comfort are the most important aspects.

### 3.2 Design Principle Analysis

The author summarizes some factors needed to consider into the design through research, which is important and necessary.

(1) The design of functionality. Supporting and size should be considered into the design, and the design also needs to satisfy the function of easy wearing off and adjustment [7].