



RESEARCH ARTICLE

From Tradition to Modernity: Influence of the Corset on Modern Shapewear Design

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The unique design principles and structural features of the traditional corset played an important role in the history of dress, and its original function was to mould the female figure to the ideal physique promoted by society at the time. It has provided valuable experience for modern shaping underwear design in terms of technology and design, and has also had a profound influence on it in terms of aesthetic standards and cultural heritage. Modern shapewear design is a complex process that synthesises historical tradition, modern aesthetics, ergonomics and technological innovation, which pays more attention to health and comfort while inheriting the essence of tradition, reflecting the positive contribution of scientific and technological progress to the quality of human life. This study re-examines the formal and aesthetic characteristics of the corset from a design perspective, and explores its position and role in contemporary shapewear design. By analysing the classic design elements of the corset, the study proposes the forms and methods of its application in modern shapewear design, providing new ideas and directions for modern shapewear design. Through design practice, the balance point between traditional and modern design is identified, and it is argued that shapewear can be designed to be more comfortable, beautiful and healthy based on inheriting traditional aesthetics and combining ergonomics and fashion trends.

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INTRODUCTION

There is an inheritance relationship between traditional corsets and modern shapewear. Corsets, especially those popular from the Renaissance to the mid-20th century, mainly shaped women's slender bodies by strongly binding the waist, emphasizing functionality and decoration, and were a means for early women to pursue curvaceous beauty. As a kind of modern underwear, shapewear is fundamentally different from corset in terms of design concept, health and comfort, which combines advanced fabric technology, ergonomic principles and fashion design elements, and helps the wearer to achieve the effect of shaping and enhancing the body curves through reasonable pressure distribution and tailoring skills. Modern shapewear inherits and develops the corset's pursuit of body curves while paying more attention to wearing comfort and health.

Although the corset came at the expense of women's health, it set a precedent for shaping the body's silhouette through undergarment design. It shaped the body through unique modelling, structural forms and cutting forms, combining fabrics, decorations and support structures to create an art of clothing that met the aesthetic standards of the time and had great visual impact. It became an important carrier to show women's glamour and identity, and also provided valuable reference and creative inspiration for the design and development of modern shaping underwear. Modern shapewear design is developing in the direction of fashion, comfort, health, environmental protection

and personalisation by improving and innovating the design based on the design and aesthetic features of the corset.

ANALYSIS OF PREVIOUS RESEARCH

The corset changes different structural characteristics and cultural connotations at different times, and the research and exploration of corset culture can obtain diversified and multi-level aesthetic cognition about corset, which is conducive to designers obtaining design inspiration (Yin, 2022). It provides rich aesthetics and design concepts for the design of modern shapewear, and promotes the innovative development of material science, ergonomics and design technology.

In *A Hundred Years of Lingerie*, Kareb (2000) chronicles the development of Western lingerie, revealing how the corset has evolved. From the constricting Victorian corset to modern lingerie styles that are as comfortable as they are sexy, they reflect the process of emancipation of women's individuality, technological advances, and social and cultural changes. Valerie's *Underwear: A Cultural History*, Muriel and Shazia's *The Story of Women's Underwear* explored the innovation and development of the corset from a cultural and design perspective (Valerie, 2004; Muriel and Shazia, 2016). Gao (2022) researched the style and structure diagrams of corsets from the 17th to 19th centuries, physical drawings, and other materials. Taking dress culture, styling, and structure as her starting point, she explored the gradual transition from noble women to women of all classes who wore corsets as objects. The structural design of corsets at that time people's aesthetic concepts, production technology and wearing habits, the three-dimensional modelling of modern clothing, ergonomic design and other aspects have a profound impact. Through the study of its structure, we can better understand the relationship between underwear and the human body, master the basic principles of underwear support and shaping, and provide a scientific basis for modern body-shaping design. Barrington (2016) collected drawings and information on nine historical corsets and described how structural patternmaking based on modern anthropometric data can be used to obtain corset garment paper samples suitable for modern human body shapes, which can be used to meet modern corset design needs. In terms of craftsmanship, Thomas (2019) included drawings of 83 historical garments that existed from 1837-1969 and provided precise paper pattern construction, craftsmanship details, and materials used for each garment, aiming to provide historians with an important tool for the restoration and preservation of historical garments. Li and Sun (2024) analysed the binding capacity and shaping effect of corsets on the human body, as well as the changes in the displacement of various parts of the skin after the corset exerts pressure on the human body.

Digitisation provides an efficient and precise technical means for the restoration of corsets, which reproduces the internal structure and delicate details of historical costumes through 3D scanning and digital modelling techniques. Zhao (2021) proposed a method for constructing a virtual simulation model of classical corsets. Kang et al. (2019) applied 3D virtual fitting technology to reconstruct a 3D model of Rococo period dresses and summarised the positive effects of the technology: firstly, the technology enables realistic reproduction of decorative crafts such as lace and embroidery; and secondly, the process of virtualisation contributes to an in-depth understanding of the construction and silhouette of the garments. By using digital software to construct its virtual model, it is possible to complete the digital conversion of the relationship between clothing and the human body, and explore the impact of corsets on the human body through more specific experiments and more intuitive data (Xu et al.,2022).

For the research on modern shapewear, scholars often explore it from the perspectives of ergonomics and stress testing. Fan and Fu (2021) investigated the relationship between fabric stretch and garment pressure in one-piece shapewear. Zuo et al. (2022) modelled the graded shaping effect of a lower bust corset by exploring the pressure and shaping effects. Zhang et al. (2022) used 3D body scanning and subjective evaluation to explore changes in body shape from wearing shapewear undergarments based on body shape changes and waist-to-hip ratio changes. Na (2015) explored the physiological response of the body to pressure from tight corsets through changes in heart rate, blood flow, sweat, metabolism, and subjective stress during human exercise. Yang et al. (2017) studied the comfort, liking, and slimming effects of tight corsets with different segmentation

line structures. Sun and Zhou (2018) conducted zoning design for shapewear based on principles such as ergonomics, material and tissue selection, and fat flowability.

Through the collation and summary of domestic and international literature, it can be seen that scholars' research on corsets mainly focuses on the fields of history, culture, aesthetics and model construction. The research on modern shapewear underwear mainly focuses on the relationship between the pressure test of underwear on the human body and the shaping of the human body. There is a lack of attention to the correlation between the two, the design method of modern shapewear, and how to integrate culture and fashion into the design.

MATERIALS AND METHOD

This paper mainly adopts the research method of inductive deduction to ensure the systematic and scientific nature of the research. Inductive deduction, as a logical analysis method, played a key role in this study. This method extracts universal laws or characteristics from a series of specific phenomena through induction; by deduction, apply these universal laws or characteristics to new situations or objects to derive conclusions.

Generalization stage

Collection of information and observation: this study extensively collects historical information about traditional corsets, including their design principles, material choices, wearing styles, and social and cultural backgrounds. At the same time, similar information on modern shapewear corsets is collated to form a basis for comparative analysis.

Feature extraction: Through the analysis of the traditional corset, its core features are summarized, such as the emphasis on the shaping of the body curves, the use of multi-piece divisions in the body of the garment, and the aesthetic concepts that are closely linked to a specific era. These features reflect the basic attributes and functions of the traditional corset.

Summary of influences: summarise the effects of the traditional corset on the wearer's body shape, comfort, and social role perceptions, and how these have evolved.

Deductive stage

Theoretical framework construction: Based on the conclusions drawn in the inductive stage, the researcher constructs a theoretical framework for explaining the potential connection between traditional corsets and modern shapewear. This framework includes the inheritance and innovation of design concepts, the advancement of material technology, and the impact of social and cultural changes on lingerie design.

Modern application deduction: Using deductive reasoning, summarize the shaping principles of tight corsets and the design characteristics of modern shapewear, and form general conclusions. Apply the core features and influencing factors of traditional tight corsets to modern shapewear design and analyze them. For example, modern shapewear inherits the structural characteristics of traditional tight corsets, but uses more comfortable and elastic modern materials to meet the contemporary demand for both health and comfort.

Prediction and validation: Based on the results of deductive reasoning, predict the development trend of modern shapewear underwear, and how to balance its aesthetics and functionality, tradition and modernity through technology and design innovation. And verify its validity and feasibility through modern body-shaping underwear design cases and design innovation practices.

RESULT AND DISCUSSION

Formal characteristics of the corset

In the history of the development of Western clothing, the status of underwear had been in a rather important position, if it left the underwear, the West nearly a hundred years since the women's clothing culture would not be able to talk about. The historical origins of Western lingerie can be seen in the statue of a snake-wielding goddess from the Cretan period of Ancient Greece, which was unearthed in the 19th century. She wore a lace-trimmed short-sleeved shapewear, with a rope tightly tied around her waist below her chest. Due to the support of her chest, her exposed breasts stood tall

and full of personality charm. By the time of Ancient Rome, women had already developed the concept of lifting and securing their breasts and lifting their buttocks with tight trousers, and undergarments like today's bras and panties were invented at that time. At the end of the Middle Ages, influenced by Gothic culture, women uniformly removed the difference between the chest, waist, and buttocks from the front, back, and side panels of fitted underwear to achieve three-dimensional shaping, laying the foundation for the development of corsets. From the Renaissance to the mid-twentieth century, the corset played an important role, people used the corset to make the waist thinner, and the breasts higher, with the skirt or buttock pads to exaggerate the buttocks more voluptuous, which strengthens women's physiological characteristics at the same time, so that breasts, waist, buttocks undulation of the human body constituted by the curves of the beauty of the aesthetic trend at the time.

Traditional tight corsets can be divided into two forms: one is made of perforated metal sheets, connected by hinges on both sides of the body, and belongs to the most powerful orthopaedic underwear, which is also the most harmful to the human body. Its shape is inverted and triangular (Figure 1). Another type of design is simple and decorative. It is based on the human body and achieves a straight and flat effect through the longitudinal splicing of fabrics on the chest, abdomen, and waist. It adopts multi-layer stiff fabric overlapping sewing, with multiple oblique divisions at the waist. Thin triangular pieces are inserted into the chest and waist to increase the bottom swing capacity, and whalebone is used to maintain and fix the shape at the division of the pieces, strengthening the contraction force of the tight corset (Wang, 2018), thus forming body-shaping underwear. The corset creates an S-shaped body curve for women through the external force of the garment from bottom to top (Figure 2).



Figure 1: Metal corset, Museum of Fashion, Paris



Figure 2: Blue silk corset, Victoria Museum, London

Aesthetic characteristics of the corset

The Western clothing system has always taken human beauty as the eternal theme of expression, and the custom of appreciating the beauty of the human body is also a general characteristic of Western art that distinguishes it from Oriental art. Aristotle believed that the highest state of aesthetics is to imitate things as they should be. Under the guidance of this idea on the human body, the imitation, reproduction, the strengthening of sexual characteristics of the Western countries become the main features of the clothing, that is, vigorously express individuality, emphasising the exaggerated curves of the human body and the beauty of gender.

The corset reflects the cultural values and social customs of a particular era, and its most notable aesthetic feature is the pursuit of an hourglass figure. This figure is characterised by plump breasts, slim waist and rounded hips, forming an obvious S-shaped curve. The corset tightens the waist to an extreme narrowness through multiple cut-outs and internal steel boning, accentuating the curves of the breasts and hips. This pursuit of an hourglass-shaped figure reflects the specific standards of beauty for women in society at that time, as well as a certain idealization and objectification of the female body. It can be said that, in addition to the denial of the existence of human beings and human beauty that appeared at the beginning of the Middle Ages in the West, no matter which period it is, it is very realistic to embody the part of women's beauty is locked in the breasts, waist or buttocks,

which embodies the second characteristic of women with the trinity of breasts, waist and buttocks. Expressed in the underwear is the structure of deliberately exaggerated, over-emphasis on female sexual characteristics, through the re-combination of the structure of the underwear, the formation of a three-dimensional form of corset, skirt support and hip pads and other underwear.

The design of corsets is often influenced by social customs, religious beliefs, economic conditions and other factors. During the Renaissance, the rise of the corset echoed the rise of humanism, which embodied the pursuit of individuality liberation and physical freedom; during the Baroque and Rococo periods, the complexity and splendour of the corset were in line with the luxury and delicacy of the court culture at that time. Whether it promotes female autonomy or oppression, shapewear has become a market icon because of its ability to maintain a steady market appeal over time and across body-centred market portfolios, symbolically articulating the role of women while shaping their bodies (Zanette, 2018). Among the aristocracy and high society, corsets were regarded as a symbol of status and wealth. Expensive materials, intricate craftsmanship and exquisite decoration made the corset a luxury item. Although the general public had similar clothing, the quality and craftsmanship were far inferior to that of the aristocracy. In addition, the aesthetic characteristics of the corset largely reflect male aesthetic preferences. The social expectations of women at that time were gentle, submissive and beautiful. By shaping an hourglass figure, the corset reinforced the gendered characteristics of women and made them more in line with the male imagination of female beauty. This aesthetic trait was not only reflected in the design of the corset, but also permeated the literary, artistic and social activities of the time, becoming a widespread social phenomenon.

The inspiration of traditional corsets on modern shapewear design concepts

Traditional corsets are important underwear for women to shape the curves of the human body. Although wearing them for a long time can cause compression and damage to bones, internal organs, etc., their unique structure, shape, and decorative form showcase the artistic charm of traditional clothing and contain a profound understanding of human aesthetics. In modern shapewear design, the classic design elements of tight corsets are widely borrowed and applied to meet the dual needs of modern women for underwear functionality and aesthetics.

Optimization of structure and function

Traditional corsets achieve a strong shaping effect through complex structural design, but often at the expense of wearing comfort. Modern lingerie design pays more attention to the optimization of structure and diversification of function based on retaining the shaping function.

The design of structural lines in corsets is key to the shaping function and an important element for innovative applications. The structural line is changed, combined, decomposed and transferred according to the requirements of human body structure and motor function, so that the garment fabric wrapping the human body achieves the goal of transforming from two-dimensional plane to three-dimensional, thus completing the occupation of space by the torso (Cui, 2009). Modern women's underwear is based on comfort, and the shape, length, position, and quantity of the dividing lines in the underwear structure design have a certain impact on its wearing comfort. When designing structural lines, consideration should be given to the female body structure, such as the shape of the chest and waist, distribution of subcutaneous fat bodies, etc., to ensure the rationality of the segmentation line position. The structural lines are symmetrically distributed according to the human body structure, which can disperse the pressure of the bra on the body, making the shaping function more stable and comfortable to wear. In addition, the performance of the fabric should be fully considered during the design process (Sun, 2022). The extensibility, elasticity, thickness, and surface texture of underwear fabrics have a direct impact on the design and final effect of the dividing line. For example, when using highly elastic fabrics, the design of dividing lines can be more flexible and varied to achieve better shaping effects; for thicker or stiff fabrics, it is necessary to consider whether the dividing line will increase the discomfort when wearing.

In modern shapewear design, multifunctional elements have also been introduced, such as adjustable or detachable shoulder straps, convertible vest styles, etc., increasing the flexibility and diversity of underwear (Figure 3).

The detachable shoulder strap design allows underwear to be easily converted into strapless or cross shoulder strap styles, suitable for pairing with various clothing, increasing the convenience and fashion sense of wearing. The convertible vest style allows underwear to be worn as a fashionable item for outerwear. These structural and functional optimizations not only enhance the practicality and comfort of underwear, but also meet the personalized and diversified needs of modern consumers.



Figure 3: Multi-functional modern shapewear design, Pinsen Clothing, 2023

Fusion of decoration and aesthetics

Traditional corsets use lace, embroidery and strappy designs to add ornamentation and beauty. These elements accentuate feminine elegance and glamour, giving the corset a rich cultural connotation.

Designers can combine the cutting methods and decorative elements of corsets with fashion trends to create lingerie styles that are both in line with fashion trends and have their characteristics. For example, the lace and strap elements of the corset are integrated into modern lingerie design, which not only retains the vintage flavour of the corset but also adds a sense of fashion; or the shaping effect of the corset is combined with sports elements to create functional lingerie suitable for both daily wear and sports and fitness. In 2022, GUCCI and Adidas jointly launched a sports shapewear that combines the sexiness of traditional fishbone bras with a casual sports style, forming a mixed style (Figure 4). Modern shapewear design also emphasizes innovation in colour and pattern, creating more visually impactful effects through bold colour combinations and unique pattern designs. Lingerie designer Cheng Xiaohong incorporated traditional Chinese plum blossom patterns into shaping lingerie design through embroidery and digital printing (Figure 5). She aimed to highlight the curves of the human body, borrowed the structural segmentation form of tight corsets, and designed modern underwear products that are both plastic and trendy through the thickness relationship of fabrics and the contrast relationship of patterns.



Figure 4: GUCCI and Adidas joint shapewear model

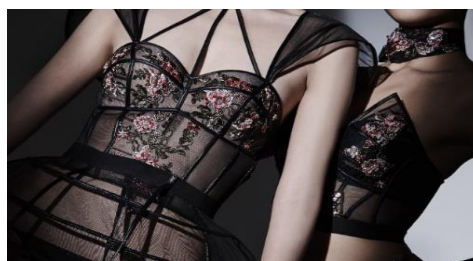


Figure 5: Modern shapewear design, Cheng Xiaohong, 2018

Innovations in materials and technology

Traditional corsets often use heavy fabrics and rigid support materials, such as whale baleen and metal boning, to achieve a strong shaping effect. However, while these materials provide support, they also bring a greater sense of compression and discomfort. With the development of science and technology and the consumer's demand for comfort, modern underwear design pays more attention to lightness, comfort and environmental protection in the choice of materials. High-tech fabrics such as nylon, polyester and Lycra are widely used. These materials not only have good elasticity and

breathability, but also provide excellent support, making underwear more comfortable while maintaining its shaping function. For example, the high elasticity and recovery ability of Lycra fibres enables underwear to fit better to the body, reducing the feeling of constriction and improving wearing comfort. In addition, the use of environmentally friendly materials such as organic cotton and recycled fibres not only reduces the impact on the environment, but also meets consumer demand for health and sustainability. The softness and breathability of organic cotton make the underwear more skin-friendly and reduce the risk of skin allergies, while the use of recycled fibres reflects the brand's eco-friendly philosophy and has won the favour of more and more consumers.

In terms of technology, modern shapewear design has introduced advanced manufacturing processes such as laser cutting, 3D printing and smart weaving technology, the application of which has led to more precise and diverse designs. Laser cutting technology can accurately cut complex patterns and openwork designs, which not only improves production efficiency, but also makes the designs more delicate and aesthetically pleasing. 3D printing technology, on the other hand, allows for the creation of customised support structures, such as personalised rims and spacers, which provide better support and can also be adjusted to suit an individual's body shape for a personalised contouring effect. In 2024, Dutch designer Iris van Herpen successfully created a 3D-printed wedding dress with a structured corset that wrapped around the torso and neck like a bony vine, demonstrating the perfect combination of modern technology and high fashion. The application of intelligent weaving technology enables the fabric to be woven more evenly and tightly, improving the durability and comfort of underwear. For example, smart weaving technology enables a multi-layer structure of fabrics with soft cotton or silk on the surface and high elastic fibres on the inner layer, which is both aesthetically pleasing and practical. Therefore, the material and technological elements in corsets provide more possibilities for modern lingerie design and promote the innovative development of the lingerie industry, making lingerie not only shape-shaping, but also more comfortable, environmentally friendly and personalised.

Innovative design of modern shapewear based on corset features

The progress of society and changes in people's aesthetic concepts have led to modern women's demand for shapewear no longer limited to basic protective and supportive functions. Shaping, aesthetics, and comfort have become the mainstream of design. As a classic type of underwear in history, the corset's unique design principles and structural characteristics provide a rich source of inspiration for the design of modern shapewear. This design combines material science, ergonomics and modern aesthetics, and combines the elements of corset and Chinese intangible cultural heritage "plant dyeing" to create an innovative design for body-shaping underwear. "plant dyeing" is an ancient printing and dyeing technique in China, which forms unique patterns and colours by transferring natural pigments from plants to fabrics. It is also a new attempt to integrate natural aesthetics and traditional craftsmanship into modern underwear design. The design flow is shown in Figure 6.

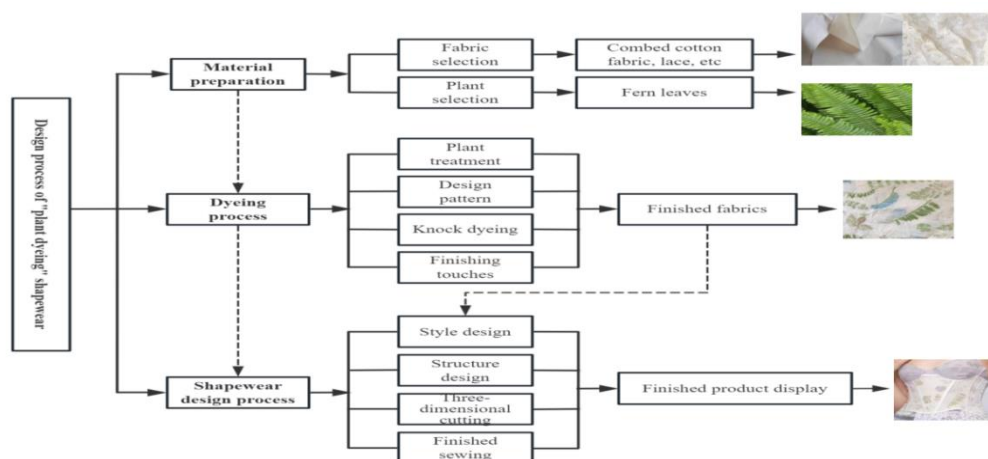


Figure 6: Innovative design process diagram for shapewear

In the design, the shapewear draws on the traditional three-dimensional cutting technology and support system of tight corsets in its structural design. Through scientific measurement and data analysis, the design is optimized to better fit the curves of the human body and improve the wearing experience. In terms of style, the bra is combined with a waistband, with cross straps on the bra straps to prevent them from falling off, and a 3/4 cup design with soft steel rings at the bottom. The waist design adopts an eight-piece segmentation form, with two dividing lines extending upwards in the front and middle to reach the highest point of the chest. The back of the dividing line is sewn with a support strip, which conforms to the characteristics of the human body's turning surface and can provide a good support and shaping effect. The back is designed with vintage lace-ups, which can be sized according to your body shape, and also helps to increase the beauty and fashion of the design. The colour palette of lilac and yellow, combined with the floral topiary pattern, creates a romantic and elegant atmosphere. The fabrics are selected from combed cotton and lace, ensuring skin-friendliness, breathability and aesthetics (Figure 7).



Figure 7: Design of shapewear style chart and display of finished products,

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CONCLUSION

As an important part of traditional women's clothing, the development of the corset has witnessed changes in women's social status, aesthetic concepts and lifestyles. From binding the body to the pursuit of comfort and health, the corset has gradually been replaced by modern shapewear in the historical evolution. Based on inheriting the artistic characteristics of corset, modern shapewear design pays more attention to women's physical health and emotional needs, and focuses on the functionality, comfort and aesthetics of the design. The influence of corset on modern shapewear underwear design is reflected in: inheritance and innovation of design concepts, optimisation of structure and function, fusion of decoration and aesthetics, and innovation of materials and technology. In addition, the integration of personalisation and environmental protection concepts into the design practice is an organic combination of tradition and modernity, practicality and environmental protection, and a positive exploration of sustainable design of shapewear. Under the dual role of inheritance and innovation, modern shapewear design will move towards a more fashionable, diversified, personalised and sustainable direction.

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