



# FROM TRADITION TO INNOVATION: A CULTURAL AND DESIGN EXPLORATION OF INDIGENOUS JAPANESE SITTING CHAIR

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**Abstract:** A zaisu is a Japanese chair with a typical chair back but no legs. They are frequently used for relaxing beneath hot kotatsu tables and are frequently found in traditional rooms with tatami mats. Seiza, which involves kneeling with the weight on top of the lower legs that are folded beneath the body, is considered the proper seating position in Japan. The zaisu, where the back is supported and the legs can be placed more easily, is preferred by many because this can become unpleasant after extended periods of time or for persons who are not used to it. People in our nation experience too many spinal issues due to the variety of chairs available. Their incorrect sitting posture and the lack of ergonomics in the design are the causes of these issues. The primary need is Japanese sitting chairs are not available in Indian markets. Contradictory about this chair is it is available in international market but the price is comparatively high in Indian currency. Approximately the cost of Japanese chair in international markets is about 300\$ which is around 32,000 rupees in Indian currency for importing. So, in our project we are studying about the mechanism and try to develop a Japanese sitting chair with comfort and affordable price with perfect ergonomic posture.

**Index Terms - Japanese chair, Ergonomics, Recliner chairs, Design of ergonomic chair.**

## I. INTRODUCTION

**BRIEF OVERVIEW OF THE HISTORY OF SITTING IN JAPAN:** In Japan, traditional sitting practices have been an important part of the country's cultural heritage for centuries. Historically, the Japanese people used a variety of traditional sitting positions, which were influenced by the country's unique architecture and cultural practices. One of the most common traditional sitting positions was seiza, which involves sitting on one's heels with the legs folded underneath the body. This position was often used during formal ceremonies and religious practices. Another traditional sitting position was agura, which involves sitting with one leg crossed over the other. This position was more relaxed and was commonly used in informal settings. Traditional Japanese sitting practices were also influenced by the country's architecture, which often featured tatami mats, low tables, and floor cushions. This style of architecture encouraged sitting on the floor and made it easier to transition between different sitting positions. In addition to its cultural and practical significance, traditional sitting was also believed to have health benefits, such as improving posture and promoting circulation. In recent years, the use of traditional sitting practices in Japan has declined, as more people have adopted Western-style furniture and sitting practices. However, there has been a renewed interest in traditional Japanese sitting practices, with a growing number of designers and furniture makers developing indigenous Japanese sitting chairs that combine traditional sitting practices with modern design [2, 14].

**IMPORTANCE OF TRADITIONAL SITTING IN JAPANESE CULTURE:** Traditional sitting has played an important role in Japanese culture for centuries. It is closely tied to the country's history, art, and architecture, and has been a key element of Japanese customs and rituals. Here are some of the main reasons why traditional sitting is important in Japanese culture:

**Cultural identity:** Traditional sitting practices are an important part of Japan's cultural identity. They reflect the country's unique history and traditions, and are a symbol of the country's distinct cultural heritage.

**Practicality:** Traditional sitting practices were developed in response to Japan's unique architecture, which often featured tatami mats, low tables, and floor cushions. These features made sitting on the floor more practical and comfortable than using Western-style furniture.

**Health benefits:** Traditional sitting practices have been shown to have health benefits, such as improving posture, reducing the risk of back pain, and promoting circulation.

**Spiritual significance:** Traditional sitting practices are also associated with spiritual and religious practices in Japan. For example, the seiza position is often used during meditation and prayer.

*Social customs:* Traditional sitting practices are closely tied to Japanese social customs and etiquette. For example, it is considered polite to sit in the seiza position during formal ceremonies and when visiting someone's home.

Overall, traditional sitting is an important part of Japan's cultural heritage and plays a significant role in the country's social, religious, and artistic practices [14].

**INTRODUCTION TO THE DEVELOPMENT OF INDIGENOUS JAPANESE SITTING CHAIRS:** Japanese sitting chairs are a unique type of furniture that reflects Japan's rich cultural heritage and its commitment to functionality and simplicity in design. These chairs are designed to be used with low tables or tatami mats, and they often feature minimalist designs that highlight the natural beauty of the materials used. Traditional Japanese sitting practices, such as seiza, tatami, and zaisu styles of sitting, have influenced the design of these chairs for centuries, and modern designers continue to incorporate these traditional techniques and materials into their work. Japanese sitting chairs are known for their comfort, functionality, and ability to promote good posture, making them a popular choice for those who value both design and functionality. Whether crafted from natural materials like wood, bamboo, or washi paper, or featuring a more contemporary design, Japanese sitting chairs offer a unique and elegant addition to any interior. The development of indigenous Japanese sitting chairs is a fascinating area of design that reflects Japan's unique cultural heritage and its ongoing commitment to innovation. Traditional Japanese sitting practices have been a part of the country's cultural identity for centuries, and these practices have influenced the design of furniture and other household items. In recent years, there has been a renewed interest in traditional Japanese sitting practices, with designers and furniture makers developing new designs that incorporate traditional techniques and materials with modern innovation. The result is a range of indigenous Japanese sitting chairs that are not only functional and comfortable but also reflect Japan's cultural traditions and aesthetic sensibilities. The primary need is Japanese sitting chairs are not available in Indian markets. Contradictory about this chair is it is available in international market but the price is comparatively high in Indian currency. Approximately the cost of Japanese chair in international markets is about 300\$ which is around 32,000 rupees in Indian currency for importing. So, in our project we are studying about the mechanism and try to develop a Japanese sitting chair with comfort and affordable price with perfect ergonomic posture.

## II. TRADITIONAL JAPANESE SITTING

**OVERVIEW OF TRADITIONAL SITTING POSITION IN JAPAN:** The traditional sitting position in Japan is known as "seiza" (正座) which means "correct sitting" in Japanese. Seiza is a formal way of sitting on the floor with both knees bent, with the buttocks resting on the heels, and the hands placed on the thighs or knees. The posture is meant to convey respect and humility in Japanese culture, and is often used in formal settings such as tea ceremonies, martial arts, and religious ceremonies. To assume the seiza position, one typically starts by kneeling on the floor with the tops of the feet flat against the ground, and then tucking the toes underneath the buttocks. The weight of the body is then shifted forward, so that the buttocks rest on the heels. The hands are placed on the thighs or knees, with the palms facing downwards. Seiza can be uncomfortable for people who are not used to sitting on the floor for extended periods of time, and may cause pain or discomfort in the ankles, knees, and back. Some people use cushions or benches to make the position more comfortable, while others may simply switch to a more relaxed sitting position when the discomfort becomes too much. Overall, the seiza position is an important part of Japanese culture and is often associated with traditional values such as respect, discipline, and mindfulness.

**BENEFITS AND DRAWBACKS OF TRADITIONAL JAPANESE SITTING:** The traditional Japanese sitting position of seiza has both benefits and drawbacks.

*Improves posture:* Seiza requires sitting up straight with the back and neck aligned, which can help to improve posture and prevent back pain.

*Enhances mindfulness:* Sitting in seiza requires a degree of concentration and focus, which can help to enhance mindfulness and reduce stress.

*Promotes blood circulation:* Sitting in seiza can promote blood circulation to the legs, which may be beneficial for those with circulation problems.

*Increases flexibility:* Regularly sitting in seiza can improve flexibility in the ankles, knees, and hips, which can help to prevent injury and improve mobility.

*Drawbacks:* Can be uncomfortable: Seiza can be uncomfortable for people who are not used to sitting on the floor for extended periods of time, and may cause pain or discomfort in the ankles, knees, and back.

*Limits mobility:* When sitting in seiza, it can be difficult to move around quickly or change positions easily, which may be a drawback in some situations.

*May not be suitable for everyone:* People with knee, ankle, or back problems may find it difficult or painful to sit in seiza, and may need to use cushions or benches to make the position more comfortable.

*Requires practice:* Seiza requires practice and conditioning to become comfortable, and may not be suitable for people who are not willing or able to invest the time and effort to become proficient in the position.

In summary, the seiza position has some benefits, such as improving posture and promoting mindfulness, but also has drawbacks, such as discomfort and limitations in mobility. It is important to listen to your body and find a sitting position that works best for you [19].

**MAINTAINING TRADITIONAL JAPANESE SITTING CULTURE IS IMPORTANT FOR SEVERAL REASONS:**

*Cultural Preservation:* Traditional Japanese sitting practices, such as seiza, tatami, and zaisu styles of sitting, are an integral part of Japan's cultural heritage. By maintaining these practices, Japan can preserve and pass down its unique cultural traditions to future generations.

*Health Benefits:* Traditional Japanese sitting practices have been shown to provide a range of health benefits, including improved posture, increased flexibility, and reduced risk of back pain. By maintaining these practices, individuals can improve their physical health and well-being.

*Environmental Sustainability:* Traditional Japanese sitting practices often incorporate natural materials like wood and washi paper, which are renewable and sustainable resources. By maintaining these practices, Japan can promote environmental sustainability and reduce its reliance on non-renewable resources.

*Aesthetics:* Traditional Japanese sitting practices and furniture are renowned for their minimalist and elegant designs, which can enhance the beauty and simplicity of any interior space. By maintaining these practices, Japan can promote a unique aesthetic sensibility that is appreciated around the world.

In summary, maintaining traditional Japanese sitting culture is important for cultural preservation, health benefits, environmental sustainability, and aesthetics. By continuing to value and practice these traditional sitting practices, Japan can uphold its unique cultural heritage while also promoting physical health, environmental sustainability, and aesthetic appreciation [5, 20].

### III. DEVELOPMENT OF INDIGENOUS JAPANESE SITTING CHAIRS

**OVERVIEW OF THE DEVELOPMENT OF INDIGENOUS JAPANESE SITTING CHAIRS:** The development of indigenous Japanese sitting chairs has a long and fascinating history. Traditional Japanese furniture, such as tatami mats, zabutons (cushions), and zaisu (legless chairs), have been used for centuries in Japan. However, as Western furniture and sitting styles began to influence Japanese culture, indigenous Japanese sitting chairs evolved to meet changing needs and preferences. In the early 1900s, Japanese furniture designers began to incorporate Western-style sitting chairs into their work, while still retaining traditional Japanese design elements. These chairs often featured low backs and were made of natural materials like wood and bamboo. In the post-World War II era, Japanese designers were heavily influenced by Scandinavian design, which emphasized simplicity, functionality, and beauty in design. This led to the development of a new generation of indigenous Japanese sitting chairs that were both elegant and functional. These chairs often featured clean lines and minimal ornamentation, and were made of natural materials like wood, paper, and fabric. Today, indigenous Japanese sitting chairs continue to evolve and adapt to changing needs and preferences. Modern designs often incorporate high-tech materials and advanced manufacturing techniques, while still maintaining the aesthetic and cultural sensibility of traditional Japanese furniture. Overall, the development of indigenous Japanese sitting chairs reflects the ongoing dialogue between tradition and innovation in Japanese design, and highlights the importance of cultural preservation and adaptation in a rapidly changing world [24].

**DESCRIPTION OF KEY FEATURES AND DESIGNS:** Our project main objective is to develop a Japanese chair with best quality comfortable and affordable price. This project's work is based on developing a chair with studying the mechanism of 360 degree swivel, 5 degree angle recliner of the chair and able to add/improve new features to the chair.

*Base:* The first step of the work plan is the base which the important part to the chair. The work plan of the base is focused on managing the weight of the chair and the also the weight of the person sitting on it. We sketched rough draft of the base with different possible types

i. For example:

Rectangular hollow tube frame.

Circular hollow tube frame.

X-shaped solid rods with a base plate attached to it.

As the size of the chair exceeds the circular base we neglected the base. We tried the rectangular base which was a failure as there's a vibration when the person tends to lean back. Finally we came with a plan of x-shaped solid base with base plate over it. This base worked as we drew the base on CAD software and tested it.

*Swivel plate with bearing:* We get to know on researching about the Japanese chairs in international market that the chairs with rotating base are very less in availability. So we planned to make a chair with rotating base, on searching for the rotating base we planned to choose swivel plate with bearing. It is mainly used in rotating stools and chairs. We bought a pair used for the specimen chair and also for the reverse engineer and learn about the mechanism. We also ordered different sizes to learn which is able to withstand more weight of the chair and chair with a person sitting over it. As per our trail method the small size swivel plate could not withstand weight and there's a small shaking or vibration in the chair. We used 8" swivel plate so that it withstands more weight.

*Frame and recliner hinge of the chair:* The frame for the chair is in a rectangular shape made of a circular hollow tube. The frame of the chair has ribs with lengthy solid plates so the weight of the person is distributed eventually. For the reclining of the chair the recliner is studied and attached with frame of the chair. The recliner has 5 level of angles from 90degrees to 180degrees.



ADVANTAGES OF INDIGENOUS JAPANESE SITTING CHAIRS OVER TRADITIONAL SITTING:

**Comfort:** Indigenous Japanese sitting chairs are designed with comfort in mind, incorporating padding, backrests, and adjustable features. Traditional Japanese sitting methods, such as seiza and tatami, can be uncomfortable and even painful for extended periods of time.

**Health Benefits:** Indigenous Japanese sitting chairs can promote good posture, improve circulation, and reduce the risk of back pain. Traditional sitting methods, such as seiza and tatami, can be hard on the knees and back, leading to discomfort and potential health problems.

**Versatility:** Indigenous Japanese sitting chairs can be used in a variety of settings and with different types of tables. Traditional Japanese sitting methods are typically designed for use with low tables or tatami mats, limiting their versatility.

**Aesthetics:** Indigenous Japanese sitting chairs are often designed with an eye towards beauty and elegance, incorporating traditional Japanese design elements and natural materials like wood and paper. Traditional sitting methods, while elegant in their own right, may not offer the same aesthetic appeal as a well-designed indigenous Japanese sitting chair.

**Accessibility:** Indigenous Japanese sitting chairs can be easier for some individuals to use than traditional sitting methods, particularly those with mobility issues or disabilities. Traditional sitting methods, such as seiza and tatami, can be difficult for some individuals to use comfortably. Overall, indigenous Japanese sitting chairs offer a comfortable, versatile, and aesthetically pleasing alternative to traditional Japanese sitting methods. While traditional methods continue to hold an important place in Japanese culture and history, indigenous Japanese sitting chairs reflect the ongoing evolution and adaptation of Japanese design to meet changing needs and preferences [20].

#### COMPARISON OF PRICE:

Actual price of the chair in international market:

Price of the chair	Rs. 7652.00
Shipping charges	Rs. 54,866.34
Total	Rs. 62,518.34

Price of the fabricated chair:

Fabrication cost	Rs 10,000
Bearing price	Rs. 3,400
Foaming cost	Rs. 4,500
Arm rest price	Rs. 600
Total	Rs. 18,500

#### IV. MODERN USES OF INDIGENOUS JAPANESE SITTING CHAIRS

**CURRENT APPLICATIONS OF INDIGENOUS JAPANESE SITTING CHAIRS:** Indigenous Japanese sitting chairs have a variety of current applications in Japan and around the world.

**Home Decor:** Indigenous Japanese sitting chairs are often used as part of home decor, adding a touch of elegance and tradition to living spaces. They can be used in living rooms, bedrooms, and other areas of the home.

**Restaurants and Cafes:** Indigenous Japanese sitting chairs are popular seating options in Japanese restaurants and cafes. They can be used with low tables or as standalone chairs, providing a comfortable and unique dining experience.

**Meditation and Yoga:** Indigenous Japanese sitting chairs are often used for meditation and yoga, providing a comfortable and supportive sitting position. They can help improve posture, reduce discomfort, and promote relaxation.

**Offices and Workspaces:** Indigenous Japanese sitting chairs are increasingly being used in offices and workspaces, particularly in Japan. They can promote good posture and reduce the risk of back pain, while also providing a unique and stylish seating option.

**Healthcare:** Indigenous Japanese sitting chairs are sometimes used in healthcare settings, particularly for patients who may have difficulty sitting on the floor or in traditional chairs. They can provide a comfortable and supportive sitting position, while also reflecting the importance of cultural sensitivity and respect in healthcare settings.

Overall, indigenous Japanese sitting chairs offer a versatile and culturally significant seating option that can be used in a variety of settings and applications. They reflect the ongoing evolution and adaptation of Japanese design to meet changing needs and preferences, while also honouring the traditions and cultural significance of Japanese furniture [9].

#### V. CONCLUSION

Japanese chairs plays a major role in health and ergonomic sitting posture. This project helps in studying about the chairs and its mechanism and gives a better experience and inspiration about developing more features to the chair. Also I have learned about the health related benefits sitting in these Japanese chairs like It helps Digestion, It may help you lose weight, It makes you more flexible It may help you live longer, It keeps your joints healthy, It improves your posture, It calms your mind, Comfortable and helps you with

your sitting posture, Helps in avoiding spinal problems. This project involves knowledge about sitting posture, ergonomic chairs, and also about simple mechanism that involves and plays a major role in this chair. And we can able to develop a Japanese chair with affordable price is the main advantage of the project and still more development and more ergonomic features are to be developed in this project in the future.

On studying and developing this project we get to know about different ergonomic designs and patterns which are going to be added in the next chair. A new development in the material selection so that the weight of the chair can be decreased further more.

New design in base and frame ha to be experimented and bring forth in the future chairs.

Based on the materials, process selection and parts needed we are going to focus on the deduction of cost of the chair in the future projects and add more comfortable elements.

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