

**THE USE OF SMART SLEEPWEAR AS A NATURAL AND SUSTAINABLE WAY TO IMPROVE SLEEP QUALITY ALONG THE LIFE STAGE SLEEP CHALLENGES OF WOMEN**



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**Abstract**

**WOMEN AND SLEEP**

Our sleep changes throughout our lives in many ways. Partly because our sleep rhythm changes, the older we get the earlier we feel ready to fall asleep and wake up. Another very important factor for women and sleep is the impact of hormonal changes throughout our lives. Menstruation, pregnancy, maternity and motherhood are all periods of hormonal changes that impact our sleep negatively.

**SLEEP, TEMPERATURE & THERMOREGULATION**

Inspired by modern sportswear, Dagsmejan has developed a new type of sleepwear that supports the natural thermoregulation of the sleeping body to help us keep the best temperature for sleep. Our sleep is initiated by two factors: the rise in the melatonin level and the drop in body temperature in the early evening hours. The lowering of the body temperature can be achieved by convection, i.e. by transporting more blood to the extremities, and by sweating and evaporation. In the course of the night, the core body temperature drops until it is approx. 1° below that of the awake state. From this point, around 4 o'clock in the morning, the body begins to prepare for waking up, the core temperature begins to rise again. Unlike during the day, the core body temperature and the distal temperature largely converge. Disturbances of this natural thermo-regulation lead to a lower sleep quality, which manifests itself in interruptions, too early awakening or too short SWS ("Slow Wave Sleep") or REM phases. Our natural thermoregulation is influenced on the one hand by endogenous factors such as our general state of

health, stress level, hormone levels or diet, on the other hand we can support the quality of sleep by exogenous factors such as room temperature (16-19°C) and the design of our sleep system. Good solutions have been available for mattresses, bed covers and blankets for some time now. The first layer - the layer that we wear directly on the skin - has so far been neglected in this system.

**REQUIREMENTS FOR FUNCTIONAL SLEEPWEAR**

Within the framework of an interdisciplinary research project, four core requirements for functional sleepwear have been defined: 1) Breathability: supports natural thermoregulation during the night, dissipates excess heat, protects against cooling. 2) Moisture regulation: absorbs moisture and supports evaporation; transports excess moisture away from the skin layer and thus ensures that the cooling effect of perspiration is not exceeded or that we find ourselves in clammy textiles. 3) Haptics: fine surface design to avoid irritation caused by pressure points and friction points. 4) Comfort: sleep-ergonomic design, maximum freedom of movement. **THE CONCEPT OF THE SMART PAJAMAS**

Based on the functional requirements, the team has developed a new type of sleepwear on two levels: Functionalised fibres and sleep-optimised design.

**TEST RESULTS**

1. Physical: Are the thermoregulating properties of the sleepwear superior to a conventional cotton fabric?

2. physiological: Does the sleepwear support the natural thermoregulation of the body better than an ordinary cotton pyjama to ensure that we keep the best temperature for sleep? 3rd tactile: Is the fabric softer on the skin than a regular cotton pyjama?

#### CONCLUSION—SLEEP SMART

Good sleep is one of the key factors for our regeneration. Women and men are both affected by sleep problems, but women suffer disproportionately and increasingly with age. Women are twice as likely as men to be diagnosed with insomnia. Temperature induced sleep challenges (night sweats, hot flashes) are subjectively and objectively one of the key disturbing factors for a good sleep quality. While not addressing the root causes, thermoregulating sleepwear is a pragmatic and effective instrument to help the keeping the body in the ideal climatic zone all night.

#### Biography

Catarina Dahlin is the CEO and Co-Founder of Dagsmejan, a luxurious, functionally optimized sleepwear brand. As the start-up's Co-Founder, Dahlin is actively involved with many aspects of Dagsmejan's product innovation and marketing, including developing branding, researching materials, fabric engineering, ecommerce and research.

Inspired by the textile revolution in sportswear, Dahlin aimed to reinvent sleepwear as people spend about a third of their lives in traditional pajamas, one of the least innovative garments around. In collaboration with leading research partners in Switzerland and Sweden, Dahlin and her Co-Founder Andreas Lenzhofer set out on their journey to create scientifically-backed sleepwear that improves wearers' quality of sleep so that they are recharged for the day ahead. Quickly gaining popularity and loyal customers, Dagsmejan was named one of eastern Switzerland's most innovative start-ups in 2017 and is currently featured in top publications, such as *CNN Money*, *Forbes*, and *InStyle*.

From a young age, Dahlin developed an entrepreneurial spirit and a passion for global business, which has led her to live and work in 7 countries across Europe and Asia and garner over 15 years of global and regional experience in executive positions.

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