European Research Studies Journal
Volume XXVII, Issue 1, 2024

pp. 600-616

Wellbeing and its Ergonomic Perspective: The View of Society 5.0

Submitted 08/10/24, 1st revision 20/11/24, 2nd revision 06/12/24, accepted 10/12/24

Aleksandra Dewicka-Olszewska[1]

Abstract:

Purpose: *This article examines the interconnections between wellbeing and ergonomics in the context of the vision of society 5.0, which focuses on advanced technologies supporting human well-being. The focus is on how ergonomics, supported by artificial intelligence (AI), the Internet of Things (IoT) and other technologies, can contribute to improving the quality of life.*
Design/Methodology/Approach: *Literature and available research on the application of ergonomics in the work environment and everyday life were analyzed. The collected data were compared with the concepts of society 5.0.*
Findings: *Integrating technology with ergonomics leads to reduced health problems, increased productivity and improved mental well-being. Examples of implementations include intelligent posture monitoring systems and solutions supporting work-life balance.*
Practical Implications: *The article emphasizes that ergonomics supported by modern technologies is not only a tool for improving health, but also a key to building a sustainable society.*
Originality/Value: *The study connects the concept of wellbeing with the technological aspect of society 5.0, pointing to innovative approaches to holistic well-being.*

Keywords: *Wellbeing, ergonomics, society 5.0, assistive technologies, sustainable development, mental health.*

JEL Codes: *I31, J81, O33, M54.*

Paper Type: *Research article.*

[1]*Faculty of Engineering Management, Poznań University of Technology, Poland, ORCID: 0000-0003-4683-6519, e-mail: aleksandra.dewicka-olszewska@put.poznan.pl;*

1. Introduction

The concept of Society 5.0 focuses on the harmonious combination of technology and humanism, and its key goal is to improve the quality of human life while using advanced technologies such as artificial intelligence (AI), the Internet of Things (IoT) and big data. The emergence of the concept in which technology is a tool for improving the quality of human life and health results from dynamic technological development, globalization and changing work and life models.

An important element of the economic implementation of the Japanese vision of society is the concept of well-being, which includes both the physical, mental and social well-being of the individual. Well-being as a complex state of balance of social happiness requires the creation, organization and shaping of an appropriate work and everyday life environment. Which in the case of ergonomics, as a science of adapting the material and organizational environment to human needs, becomes a key tool supporting well-being.

Ergonomic solutions in Society 5.0 take on a new dimension thanks to the use of technologies enabling personalization and automation of the work and life environment. Intelligent systems and applications supporting work-life balance are becoming commonplace, and the growing importance of remote and hybrid work additionally emphasize the need to implement modern human-centric ergonomic solutions (Wilson, 2018).

This article focuses on the connections between the idea of well-being and ergonomics in the context of the needs of Society 5.0, and also presents existing ergonomic solutions that increase human productivity and job satisfaction. It also addresses aspects of physical and mental well-being, which are key to realizing the vision of a sustainable society.

2. Literature Review

According to the economic development concept of the Japanese Council for Science, Technology and Innovation (CSTI), Society 5.0 is a society that supports individual well-being, using advanced digital technologies. The idea of Society 5.0 is characterized by human-centrism related to the fact that technology can serve people and not the other way around; sustainable development related to counteracting environmental crises and social and demographic inequality; innovation and cooperation related to supporting interdisciplinary projects and sectors of the economy, as well as the integration of the physical and digital worlds.

The report of the National Institute for Science and Technology Policy in Japan (NISTEP) defines Society 5.0 as a vision of "a world in which digital technologies cease to be a separate element, but become an inseparable part of every person's reality."

Society 5.0 as the next stage of evolution is an economic response to growing global challenges, and thanks to the dynamic development of automation technology, artificial intelligence (AI) or the Internet of Things (IoT), ergonomics has gained new tools that enable the improvement of human health, life and productivity. Thus, approaches to considering it in the aspects of technical ergonomics, work ergonomics, ergonomics in the home environment, ergonomics of public space and holistic ergonomics have been shaped.

Society 5.0 uses all currently available and developing technologies to create a human work and living environment that can adapt to their needs in real time. One of the technologies that constitute the foundation of contemporary ergonomic design is Big Data collections, which allow for the identification of behavior patterns and user needs, thus enabling the creation of personalized ergonomic solutions.

Another such technology is Artificial Intelligence (AI), which collects and analyzes data from various available and public digital sources that surround the user (applications, sensors). The Internet of Things (IoT), on the other hand, enables communication between devices (e.g., desks, air conditioning, lighting), which together create an integrated ergonomic environment.

Modern workplaces in Society 5.0 differ in many respects in the concept of ergonomics at work. This is related to the introduction of a hybrid office work model that combines remote and stationary work, and thus poses new challenges for ergonomics. Ergonomic design solutions for workplaces must take into account the needs of both home offices and traditional office spaces. Smart desks with height adjustment allow you to work in a standing and sitting position.

Adaptive workstations of Society 5.0 improve not only the comfort of performing work tasks but also reduce the risk of health problems resulting from, among others, prolonged sitting. The physical work environment and its lighting and acoustic factors are also important. Ergonomic lighting that adjusts its intensity to internal and external conditions, as well as noise reduction using appropriate acoustic materials, are crucial for the concentration of modern society and its mental health (Dul *et al.*, 2008).

In the era of Society 5.0, where remote work has become common and popular, home workplaces must meet ergonomic standards that support user well-being. This is made possible by ergonomic furniture, such as chairs with adjustable lumbar support or desks equipped with control panels that allow you to adjust the workspace to the individual needs of the user.

Personalizing the workspace and adjusting its settings (e.g. temperature, humidity, lighting) to the individual preferences of the user is also important. Technologies supporting ergonomics at home also include applications (e.g. health, fitness) that remind you of breaks, exercises or the need to change position.

Modern society assumes the creation of smart cities supporting the well-being of residents through the use of ergonomic solutions in, among others, public transport, public utility buildings or recreational spaces. Public transport ergonomics is the design of vehicles (public transport) and stops that take into account the needs of all users, especially the elderly and people with disabilities.

Ergonomic traffic management systems optimize access to transport and minimize fatigue and stress associated with moving in urban and suburban structures. Intelligent ergonomic systems used in buildings in buildings (elevators, voice-controlled, automatic doors) increase accessibility and comfort of use, and practical ergonomics implemented in parks and recreational areas supports physical activity and rest.

The holistic approach to ergonomics in Society 5.0 includes aspects of psychological support for humanity and continuous development and education. Ergonomics with technological system support allows for controlling the level of human stress and its reduction. Based on, among others, biometric data and the use of Artificial Intelligence (AI), it is possible to predict the needs of users and propose rest and relaxation techniques based on their daily habits (Brown *et al.*, 2020).

On the other hand, training and workshops in the field of ergonomics are becoming a standard in entrepreneurial organizations, which are increasingly and willingly supporting the well-being of their employees. Ergonomics in Society 5.0 is a comprehensive approach to designing a modern work and living environment.

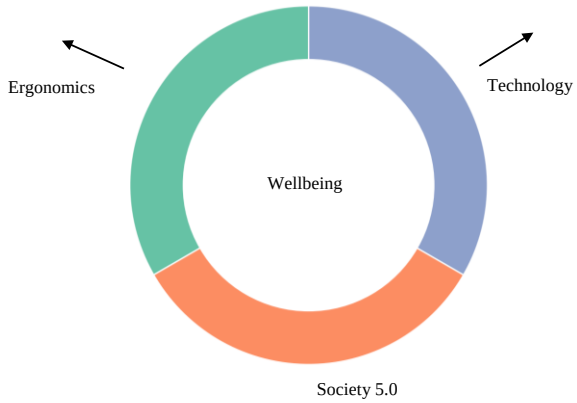
Wellbeing, or well-being, is a general state of health, happiness and life satisfaction, which includes various aspects of human functioning. The idea of wellbeing is understood as a holistic balance between the physical, mental, emotional and social aspects of human life. And contemporary challenges related to lifestyle, workplace and technology mean that ergonomics is becoming one of the key tools supporting wellbeing (Harris, 2021).

The task of ergonomics is to adapt the environment and the material technical and organizational means used by it to the needs and capabilities of a person, which directly affects their life, health, but also comfort, efficiency and productivity. The concept of Society 5.0 emphasizes the harmonious cooperation of man and technology, thus ergonomics and its practical solutions combine science with innovation. This complexity is illustrated in Figure 1.

Ergonomics is an integral part of well-being in society 5.0, primarily through its physical impact on human well-being, related to reducing occupational risks, injuries (prevention of health problems), near-miss incidents and improving the comfort of everyday functioning. According to the report of the European Agency for Safety and Health at Work (EU-OSHA), musculoskeletal disorders constitute the largest percentage of occupational diseases (Table 1). And its researchers emphasize the

need to implement modern and effective preventive measures in the workplace.

Figure 1. *Interconnections between ergonomics, society 5.0, technology and well-being*



Source: *Author's own work.*

Table 1. *The most common work-related illnesses*

Type of health condition	**European percentage share Data from 2023**
Musculoskeletal disorders	60
Respiratory diseases	15
Skin diseases	10
Hearing diseases	5
Work-related cancers	5
Other (e.g. infectious diseases, mental disorders)	5

Note: *Data rounded to full percentages.*
Source: *Based on data from the report of the European Agency for Safety and Health at https://osha.europa.eu.*

Musculoskeletal disorders (MSD) include back, neck and wrist pain. Therefore, ergonomic workstations (adjustable and personalized) make it possible to minimize muscle tension in users. Additionally, the introduction of ergonomic tools (e.g. keyboards, computer mice) with an appropriate shape reduces the risk of carpal tunnel syndrome and other injuries resulting from repetitive work activities (European Commission, 2020).

In a sustainable Society 5.0, technologies such as Artificial Intelligence (AI) and the Internet of Things (IoT) monitor the user's health, and maintaining well-being is supported by ergonomic solutions promoting physical activity, especially in the workplace. Reminders generated by mobile applications or wearable devices encourage users to take regular breaks and exercise (both at work and at home).

The second aspect of the connection between wellbeing and ergonomics is mental well-being, which is inextricably linked to an ergonomic environment. Work-life balance, stress, and burnout are contemporary challenges for society and the economy. Ergonomics counteracts them through appropriate design of the work environment.

Ergonomic workstations reduce physical tension, thus directly affecting stress reduction, and users who feel comfortable in the workplace are most often less susceptible to frustration, anger, or exhaustion. Ergonomically designed work spaces take into account access to natural light, silence, and privacy. They also help people maintain concentration and reduce their level of emotional tension (Organisation for Economic Co-operation and Development, 2022).

Ergonomic time management technologies help maintain a balance between professional duties and rest. Work, and especially remote work, increasingly common in Society 5.0, requires an ergonomic approach to avoiding mental overload.

Therefore, in line with the idea of well-being, modern, knowledge-based organizations create comfortable work environments that stimulate creativity. This is of great importance, as many reports from organizations dealing with working conditions indicate that employees who feel supported by ergonomic solutions show a higher level of commitment and motivation, which directly translates into their professional effectiveness.

Ergonomics in well-being and Society 5.0 also includes supporting interpersonal interactions and inclusiveness in space design. An ergonomic and open workspace promotes cooperation and building relationships between employees (communication in teams), and the introduction of relaxation zones and common spaces increases their sense of belonging. In hybrid work models, technology enables integration and maintaining social bonds.

Ergonomics in well-being also supports diversity and equality by designing spaces accessible to all. Ergonomic solutions include access to bicycle paths and intuitively designed recreational areas and optimizes them for the needs of the community. Ergonomics has great potential to support well-being, but unfortunately it also encounters many challenges.

The first of these are the diverse needs of users, which is why ergonomic design must take into account the diversity of society (in order to ensure the elimination of barriers and accessibility for all users). The second problem is of a private nature, as collecting biometric information (in order to personalize ergonomic solutions) raises questions about the security and ethics of processing this data. The third and most common problem is related to financial issues. Modern ergonomic technologies are usually expensive, which unfortunately limits their availability in smaller economic

or social organizations.
However, the development of ergonomics in this direction of well-being requires continuous investment in innovations based on ethical and social aspects. A holistic approach to ergonomic activities can make well-being accessible to everyone.

3. Research Methodology

Wellbeing and ergonomics are playing an increasingly important role in the functioning of modern enterprises and the everyday life of Society 5.0, striving for the harmonious coexistence of man and technology, and the practical application of these concepts allows the creation of environments that are conducive to health, comfort, efficiency and productivity. Taking into account the use of modern technologies, one can find key connections and ways to implement ergonomics and wellbeing in organizations and in the everyday life of a person.

The study uses the methodology of tracking current technological trends, most frequently purchased and used (based on sales data and positioning) by a sustainable society. Their names and lists are included in the tables of research results.

4. Research Results

The research results were divided into four research areas that are key to a contemporary sustainable society, i.e. work, work in the form of homme office, and everyday life at home and in the modern city.

4.1 Wellbeing and Ergonomics in Companies

Modern business organizations recognize that healthy and satisfied employees are more productive and engaged. Ergonomic solutions used in both technology and organization include physical and mental aspects of creating employee well-being.

Ergonomic workstations equipped with adjustable desks and chairs reduce the risk of musculoskeletal disorders (MSD), thus reducing the number of absences caused by health problems. Height-adjustable desks allow you to change your position from sitting to standing, and in advanced models, these desks are equipped with control panels that save the user's preferences and automatically adjust them to their needs.

An example of ergonomic furniture is a structure that supports a healthy posture, i.e., the Fully Jarvis electric desk (https://ukstore.hermanmiller.com/collections/jarvis-standing-desk) which is characterized by a wide height adjustment and also has the ability to remember settings or the popular IKEA BEKANT electric height-adjustable desk (https://www.ikea.com/gb/en/p/bekant-desk-whites19022808.

Ergonomic chairs should support the natural curves of the spine, and also allow you to adjust the height of your seat, the angle of the backrest and the armrests. Their

task is to support maintaining the correct posture while working. This is made possible by, among others, the Herman Miller Aeron chair (https://www.aeroninternational.com), which has adjustable lumbar support, breathable material and also has the ability to adapt to the user. In turn, the Steelcase Leap chair (https://www.steelcase.com) adapts to the movements of the user and also offers full adjustment of the seat and armrests.

An ergonomic specialist chair, recommended for people working long hours at the computer is the Ergotron LX (https://www.ergotron.com/pl), characterized by adjustable angle of inclination, lumbar support and seat height. Ergonomic support for both desks and chairs are also footrests with a movable platform, which support the correct positioning of the legs and improve blood circulation, e.g., Humanscale FM300 (https://www.humanscale.com) or Ergotron Footrest (https://www.ergotron.com/pl).

According to the principles of ergonomic work tool positioning, monitors should be set at eye level, at a distance of about 50-70 cm from the face, to minimize neck and eye strain. Such possibilities are provided by technical applications designed in the Ergotron LX Desk Mount Arm (https://www.ergotron.com/pl). In turn, in ComfortView technology, monitors have been focused on reducing blue light emissions (https://www.dell.com). In turn, keyboards and mice should reduce tension in the wrists and reduce the load on the joints. A technical example of ergonomic solutions is the Logitech Ergo K860 keyboard (https://www.logitech.com) and the Razer Pro Click computer mouse with a vertical grip (https://supertech.pl).

The company's task is to create optimal working conditions in which the lighting systems used will support the circadian rhythm and human concentration. Therefore, ergonomic solutions propose the use of colors similar to daylight, as well as lamps with adjustable brightness and light color, which reduce eye fatigue. And their example is the technology used in Philips Hue lighting systems (https://www.philips-hue.com) and LED monitor lamps from the BenQ ScreenBar line (https://www.benq.eu).

The work environment in a company is the impact of physical factors on a person related to acoustics and microclimate. Ergonomics in wellbeing recommends that organizations use sound-absorbing panels, floor coverings and partitions that reduce noise and support employee concentration. Noise-canceling headphones are recommended for employees working in a noisy environment.

Air conditioning systems with humidity and temperature regulation and air filters that improve air quality are also elements supporting employee comfort. Examples of such solutions are High-Efficiency Particulate Air filters carbon filters such as Blueair SmokeStop Filter, dust filters such as 3M Filtrete Air Filters, Molekule Air Pro photocatalytic filters, RabbitAir MinusA2 electrostatic filters and Honeywell UV Air Purifier UV filters (https://www.iso-aire.com).

The creation of an optimal working environment both in the enterprise and at home is supported by intelligent Internet of Things (IoT) solutions, e.g., Lutron Caséta (https://www.casetawireless.com) an automation system for managing lighting and temperature in rooms.

Wellbeing and ergonomics in companies are supported by technology related to sensors monitoring working conditions and applications supporting maintaining a balance between intensive work and regeneration. A list of the most popular technological solutions with a short description is provided in Table 2.

Table 2. *Technological solutions supporting ergonomics in the workplace*

Applications and programs supporting ergonomics	**Characteristics and short description**
Workrave	A program that reminds you of breaks and suggests exercises. It monitors the time spent at the computer and helps avoid excessive strain on the eyes and the musculoskeletal system.
Stretchly	An application that reminds the user to take short breaks.
ErgoImpact	An application that proposes optimal schedules for changing sitting and standing positions at the desk.
DeskTime	An application tool for work time management that reminds you about breaks and monitors productivity.
PostureMinder	A program for monitoring user posture via webcam. Sends alerts when user assumes improper posture.
Apple Watch	Motion and status reminders, activity monitoring, and health analyses such as heart rate and stress levels.
Fitbit Versa 4	Wearable that tracks physical activity, reminds you to take breaks and provides health tips.

Source: *Own study based on data from the following websites: https://workrave.org, https://stretchly.softonic.pl, https://ergoimpact.com, https://desktime.com, https://postureminder.app, https://www.apple.com, https://fitbitsklep.pl.*

Companies are increasingly more willing to organize workshops and training on how to properly maintain healthy habits at work. They are also introducing comprehensive loyalty programs that include access to psychological support, yoga classes, meditation, and physical activities (benefit programs and platforms).

The implementation of wellbeing and ergonomic solutions in enterprises and everyday life brings numerous benefits, but also encounters new problems related to the change in the work habits of Society 5.0.

4.2 Wellbeing and Ergonomics in Hybrid and Remote Work

Hybrid and remote work have gained popularity in the wake of the COVID-19

pandemic, and Society 5.0 is very keen to embrace this form of professional life. Adapting the home environment to office work standards requires a specific approach to ergonomics.

To maintain health and productivity, employers are increasingly offering their employees a budget to purchase ergonomic office furniture. An example of a ready-made ergonomic desk and chair set designed specifically for working in a home office is the Flexispot Home Office All-in-One Desk (https://www.flexispot.pl) or Uplift Desk V2 (https://www.upliftdesk.com).

Hybrid and remote work users are supported by Internet of Things (IoT) solutions that enable monitoring of body posture during work, and technologies supporting wellbeing in remote work include time management applications that help maintain boundaries between work and private life. A summary of sample solutions is provided in Table 3.

Table 3. *Technological solutions supporting balanced remote and hybrid work*

Wellbeing apps supporting remote and hybrid work	**Characteristics and short description**
Calm	The app offers relaxation sounds and sleep quality support programs. It offers meditation and stress reduction during remote work.
Headspace	An application for learning mindfulness techniques, relaxation and improving concentration.
Focus@Will	Users choose playlists tailored to their work style. Music is designed to support concentration and productivity.
Toggl Track	A time tracking tool that helps you plan tasks and monitor efficiency.

Source: *Own study based on data from the following websites: https://harkn.com, https://www.calm.com, https://www.headspace.com, https://www.focusatwill.com, https://toggl.com.*

Proponents of well-being in remote and hybrid work also have the opportunity to use ready-made solutions that improve comfort and automatically adjust the temperature in the home office from the Nest Learning Thermostat series (https://store.google.com). And wanting to maintain optimal air quality at home, they can use solutions offered by the Dyson Purifier Humidify+Cool and Awair Element. In turn, LIFX Smart Lights solutions make it easy to set and regulate lighting schedules that are consistent with a healthy circadian rhythm during remote work (https://www.bhpex.pl/blog). Outside the workplace (stationary, hybrid or remote), ergonomics and well-being play an important role in improving the quality of everyday life.

4.3 Wellbeing and Ergonomics in Everyday Life

In Society 5.0, technologies enable more conscious management of health and

comfort, and social campaigns promoting ergonomics for work and everyday activities increase awareness of the importance of a healthy lifestyle (examples of campaigns are included in Table 4).

Table 4. *The most popular social campaigns implemented in line with modern economies 4.0 and 5.0.*

Ergonomic social campaigns	
Active Workplace Campaign	Get Britain Standing
Zdrowy kręgosłup	Workplace Ergonomics Month
Move for Health	Safe Work Australia
Repetitive Strain Injury Awareness Campaign	Ergonomia na co dzień
Sit Less, Move More	Stand Up to Work

Source: *Prepared based on data contained in the campaign data of the Central Institute of Labour and the European Agency for Safety and Health at Work.*

The implementation of ergonomics and well-being is increasingly manifested in home solutions that provide improved air quality, thermal comfort, better sleep, healthy nutrition, and relaxation. Practical examples of IoT technologies and devices that help shape physical and mental well-being in the home space are included in Table 5. Most of these systems are supported by all kinds of smartwatches and fitness bands that monitor health parameters, activity levels, and sleep quality.

Table 5. *Technical solutions for the home*

Technical solutions for the home	
1. Lighting that supports the circadian rhythm of life	
Philips Hue	Light bulbs and lamps that change colour and intensity of light depending on the time of day.
LIFX Smart Bulbs	Lighting that adapts to your natural circadian cycle and helps regulate your sleep rhythm.
2. Air quality monitoring	
Dyson Purifier Humidify+Cool	Purifier, humidifier and fan that monitors air quality. Also removes allergens, pollen and harmful gases.
Awair Element	Air quality sensor that measures CO2, humidity, temperature, PM2.5 and volatile organic compounds (VOCs).
3. Climate and water management	
Ecobee SmartThermostat	Thermostat with built-in humidity and temperature sensor.
Xiaomi Smartmi Evaporative Humidifier	Air humidifier with mobile app control function.
Bevi Smart Water Dispenser	A water dispenser that reminds you to hydrate regularly and monitors your water intake in real time.
4. Sleep management systems	

Sleep Number 360 Smart Bed	A bed that adjusts its hardness, height and temperature to the user's preferences.
Withings Sleep Analyzer	Mattress pad that tracks sleep cycles, snoring, heart rate and breathing.
Hatch Restore	Alarm clock with daylight, white noise and meditation functions.
5. Kitchen appliances that support a healthy diet	
Tefal i-Companion	A kitchen robot with a mobile app that suggests healthy recipes.
Smart Garden 9 Pro by Click and Grow	System for growing herbs and vegetables at home.
NutriBullet Balance	A blender that analyzes ingredients and calories in real time.
6. Sound and Meditation Systems	
Bose Sleepbuds II	Headphones with the function of generating relaxing sounds and white noise.
Calm App + Smart Speaker	Speaker app for meditation and relaxing nature sounds.
7. Safety and comfort systems	
August Smart Lock Pro	An electronic lock that allows you to remotely control access to your home and check its status.
Ring Video Doorbell	Video intercom monitoring the entrance to the house.
8. Smart home management platforms	
Google Nest Hub	A smart home control panel that integrates all devices in one place. It makes it easy to manage lighting, temperature, humidification and entertainment.
iRobot Roomba i7+	A cleaning robot that keeps your home clean.
9. Apps for monitoring physical health	
MyFitnessPal	An application supporting a healthy diet and monitoring physical activity.
7 Minute Workout	An app for short and intense workouts.
Lumosity	An app with games and exercises that develop cognitive skills such as memory and concentration.

Source: *Own study based on research and data from the following websites: https://www.goodhousekeeping.com, https://www.un.org/en, https://bioslighting.com, https://info.sierrawireless.com, https://www.smssleep.com.*

Wellbeing and ergonomics are key elements of modern life. They support human health and quality of life, and their practical application in everyday life becomes the foundation for building a sustainable society of the future.

4.4 Wellbeing and Ergonomics in Public Spaces

Wellbeing and ergonomics in public spaces are implemented through various solutions, such as ergonomic benches, smart bus stops, light management systems or accessible playgrounds. And these examples in Table 6 emphasize how technology and well-designed infrastructure can support comfort, health and accessibility for all users of urban spaces.

Table 6. *Examples of applications and solutions of well-being and ergonomics in public spaces*

Public space	
Ergonomic benches and urban furniture	Benches with backrest and armrests designed for the comfort and support of older people (Landscape Forms, Victor Stanley).
	Picnic tables with wheelchair spaces.
Public transport stops	Bus stops with shelter and comfortable seats or JCDecaux Smart Shelter stops in Singapore equipped with air conditioning, solar power and charging stations for mobile devices.
	Information systems with large, clear LCD screens showing arrival times and vehicle availability.
Transport infrastructure	Driveways and ramps providing a gentle angle of inclination and non-slip surfaces and handrails.
	Seats with lumbar support and priority seat markings.
Parks and recreational spaces	Bicycle and pedestrian paths, intuitive signage, wide and with anti-slip surfaces.
	Outdoor exercise equipment including fitness stations adapted to people of all ages.
Lighting systems	LED lighting with motion sensors.
	Lamps adjust the color and intensity of light.
Urban greenery and microclimate	Pocket parks
	Urban green walls
Public buildings	Navigation systems, intuitive signage in buildings, e.g. Braille signs, large contrasting letters and pictograms.
	Recreation areas adapted to different user groups.
Public toilets	Automatic cleaning systems (e.g. Sanisette).
	Features that facilitate access for people with disabilities (automatic doors, handrails and adjustable height of sinks and toilets).
IoT Technologies	Waste bins equipped with fullness sensors that optimize waste collection schedule.
	Charging stations and outdoor coworking spaces, including tables with solar panels and USB sockets, promoting working in parks (e.g. Solar Smart Benches).
Inclusive playgrounds	Adapted to all users. Playgrounds with swings for children with disabilities and anti-slip surfaces.

Source: *Own study based on analytical research on well-being in public space.*

The examples given in the table do not exhaust the practical applications of public space. Society 5.0 places great emphasis on the development of smart cities, in which ergonomics support the comfort of life of residents. Ergonomic solutions support the idea of sustainable communities, focusing on the physical and mental development of their residents.

5. Discussion

Wellbeing and ergonomics play a fundamental role in shaping the future of workplaces, public spaces and homes. In Society 5.0, where technology harmoniously coexists with humanism, these ideas are a key element of the global drive for health, equality and environmental protection, in line with the United Nations (UN) Sustainable Development Goals (Harris *et al.,* 2019).

The vision of Society 5.0 assumes the integration of advanced technologies into everyday life, creating systems that not only meet individual needs but also support the physical and mental health of entire communities. Wellbeing, as a priority in the design of workplaces, public spaces and homes, plays an important role in achieving goals such as: "Good health and quality of life" and "Sustainable cities and communities". Designing environments that support well-being therefore supports the development of harmonious and integrated spaces that respond to the challenges of the modern world.

Ergonomics, which is the basis for creating healthy and comfortable spaces, is a tool supporting social and ecological responsibility. The implementation of ergonomic solutions improves the quality of work and life, reducing health problems such as back pain, burnout or diseases resulting from a sedentary lifestyle. Organizations that invest in ergonomics not only increase employee engagement and productivity, but also reduce the number of sick leave days. They also build the image of a socially responsible company, which attracts talent and supports the implementation of goals such as "Responsible Consumption and Production" and "Climate Action".

Technologies used within Society 5.0, such as smart thermostats, energy-efficient LED lighting or IoT sensors, reduce the consumption of energy, water and other resources, contributing to a reduced carbon footprint. These solutions support not only human well-being, but also care for the natural environment, constituting the foundation of an integrated and friendly environment for future generations.

Implementing the idea of well-being and ergonomics in everyday life and in organizations brings health, mental and economic benefits. However, it is associated with challenges, such as implementation costs, the need to integrate technologies and building awareness of the importance of these concepts. Educational activities aimed at both employees and employers are crucial to promote the importance of ergonomics for health and efficiency.

The article presents examples of practical solutions that do not require significant financial outlays, but still allow for a significant improvement in the quality of life in work spaces and in everyday life. Thanks to technological progress, the prospects for the development of well-being and ergonomics in Society 5.0 are not only broad, but also crucial for achieving the global goals of sustainable development.

6. Limitations of the Study

The methodology of research and methodological solutions for linking well-being and ergonomics was carried out in 2023 and 2024. Unfortunately, technology and human needs are constantly changing, so some of the technical and system solutions described in the study may no longer be up to date, but also replaced by newer solutions.

Active Society 5.0 is constantly developing, using newer and newer technical solutions at work, at home and in everyday life, and manufacturers make it easier for them to do so by creating competitive and cheap solutions that support social balance available to everyone.

7. Conclusions

Society 5.0 is constantly striving for a world in which humans and technology work together for the common good, and well-being and ergonomics are the foundations of this approach through the enormous potential of technological support for the personalization of technology, Artificial Intelligence (AI) and virtual and augmented reality. Unfortunately, this holistic development is also associated with significant challenges related to privacy and data security.

From 2022, extensive research related to legal structures is underway, and their specific legal regulations will be introduced soon. Well-being and ergonomics are not only tools for improving the quality of life, but also the foundation for building a modern society that puts humans at the center of attention (Smith, 2019).

The integration of technology with humanism allows for the creation of work and living environments that support human health, comfort, efficiency and productivity, contributing to the construction of a sustainable and inclusive future of Society 5.0 and its further development. Enterprises and organizations that already take a holistic approach to well-being are becoming leaders in innovation in their economic sectors.

References:

Adapt Global. 2024. The impact of office ergonomics on employee health and wellbeing. Adapt Global. https://adapt-global.com/en-us/.

Apple Watch. 2024. https://www.apple.com.

BenQ ScreenBar line. 2024. https://www.benq.eu.

Best Health Apps for Any of Your Wellness and Fitness Goals. 2024. https://www.goodhousekeeping.com.

Brown, L., Johnson, P.R. 2020. Workplace Wellbeing: Building Better Environments for Mental and Physical Health. Springer.

Calm. 2024. https://www.calm.com.

Centralny Instytut Ochrony Pracy – Państwowy Instytut Badawczy. 2024. Serce do pracy (Kampania społeczna). https://www.ciop.pl/CIOPPortalWAR/appmanager/ciop/pl?_nfpb=true&_pageLabel=P652001408016843110445 25.
ComfortView. 2024. https://www.dell.com.
DeskTime. 2024. https://desktime.com.
Dul, J., Weerdmeester, B. 2008. Ergonomics for Beginners: A Quick Reference Guide. CRC Press.
ErgoImpact. 2024. https://ergoimpact.com.
Ergotron Footrest. 2024. https://www.ergotron.com/pl.
Ergotron LX Desk Mount Arm. 2024. https://www.ergotron.com/pl.
Ergotron LX. 2024. https://www.ergotron.com/pl.
European Agency for Safety and Health at Work. 2024. Zdrowe i bezpieczne miejsce pracy: Bezpieczeństwo pracy w świecie cyfrowym (Kampania na lata 2023-2025). https://www.gov.pl/web/psse-zlotoryja/zdrowe-i-bezpieczne-miejsce-pracy-kampania-na-lata-20232025-bezpieczenstwo-pracy-w-swiecie-cyfrowym.
European Agency for Safety and Health at Work. 2024. Kampanie „Zdrowe i bezpieczne miejsce pracy" (Kampania społeczna). https://osha.europa.eu/pl/campaigns-and-awards/healthy-workplaces-campaigns.
European Commission. 2020. Digital economy report 2020: Opportunities and challenges. European Union. https://doi.org/10.2785/123456.
Fitbit Versa 4. 2024. https://fitbitsklep.pl.
Flexispot Home Office All-in-One Desk. 2024. https://www.flexispot.pl.
Focus@Will. 2024. https://www.focusatwill.com.
Fully Jarvis Electric Desk. 2024. https://ukstore.hermanmiller.com/collections/jarvis-standing-desk.
Harkn. 2024. Workplace Wellbeing in 2024. Harkn. https://harkn.com.
Harris, S. 2021. Wellbeing and Productivity in Hybrid Workplaces. Wiley.
Harris, S.T., Nguyen, R. 2019. The impact of technology on workplace productivity. Journal of Business and Technology, 30(1), 78-102. https://doi.org/10.5678/jbt.2019.12345.
Headspace. 2024. https://www.headspace.com.
Herman Miller Aeron chair. 2024. https://www.aeroninternational.com.
Humanscale FM300. 2024. https://www.humanscale.com.
IKEA BEKANT. 2024. https://www.ikea.com/gb/en/p/bekant-desk-whites19022808.
Japanese Council for Science, Technology and Innovation. 2024. https://www8.cao.go.jp/cstp/english/index.html.
Logitech Ergo K860. 2024. https://www.logitech.com.
Lutron Caséta. 2024. https://www.casetawireless.com.
Moving Beyond Consumer SIMs for the IoT. 2024. https://info.sierrawireless.com.
National Institute for Science and Technology Policy in Japan. 2024. https://www.nistep.go.jp/en/.
Nest Learning Thermostat. 2024. https://store.google.com.
Organisation for Economic Co-operation and Development. 2022. Economic policy reforms: Going for growth 2022. OECD Publishing. https://doi.org/10.1787/growth-2022-en.
Philips Hue. 2024. https://www.philips-hue.com.
PostureMinder. 2024. https://postureminder.app.
Razer Pro Click. 2024. https://supertech.pl.
Safe Work Australia. 2024. Sit Less, Move More. Safe Work Australia. https://www.safeworkaustralia.gov.au.

Smith, R. 2019. Human Factors and Ergonomics in Workplace Design. Taylor & Francis.
Steelcase Leap chair. 2024. https://www.steelcase.com.
Stretchly. 2024. https://stretchly.softonic.pl.
Thompson, M. 2021. Global trade policies in transition. Journal of International Trade Studies, 45(2), 123-145.
Toggl Track. 2024. https://toggl.com.
Unicef report on climate and improving its conditions. 2024. https://www.un.org/en.
Uplift Desk V2. 2024. https://www.upliftdesk.com.
Vitrue Health. 2024. 5 Ergonomic Tips to Boost Workplace Wellbeing. Vitrue Health. https://www.vitruehealth.com.
What is Circadian Lighting and How Does it Work. 2024. https://bioslighting.com.
Wilson, E. 2018. The Evolution of Workplace Ergonomics. Productivity Press.
Workhat Is A Hepa Filter & How Does It Work. 2024. https://www.iso-aire.com.
Workrave. 2024. https://workrave.org.
World Health Organization. 2024. Climate change and health. WHO. https://www.who.int.
Wyższy Standard Bezpieczeństwa. 2024. https://www.bhpex.pl/blog.