

Balancing Digital Life with Physical Activities

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Abstract:

In an era characterized by rapid technological advancement, digitalization has become ubiquitous in both human life and industry. While these innovations have brought about numerous benefits, they also pose significant long-term challenges to human physiology. This research explores the effects of digitalization on human health and well-being, highlighting the potential drawbacks such as dependency, sedentary lifestyles and decreased physical activity. Furthermore, it examines the role of physical activity in mitigating these drawbacks and promoting overall physiological health. By understanding the interplay between technology and human physiology, we can develop strategies to harness the benefits of dependency and digitalization while safeguarding human health.

Keywords

life style, physical activities, digital life

Reference to this paper should be made as follows:

Dr. Seema Chaudhary

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Vol. XV, Sp. Issue
Article No. 7,
pp. 050-056

Online available at
<https://anubooks.com/journal/journal-global-values>

DOI: <https://doi.org/10.31995/jgv.2024.v15iS1.007>

Introduction

Automation and digitalization have revolutionized the way we live and work, offering unprecedented levels of perfection, efficiency and convenience. However, as society becomes increasingly reliant on technology, concerns have arisen regarding its impact on human health. Sedentary behaviors, decreased physical activity, and the associated health consequences have become pressing issues in the face of automation and digitalization. This research explores the relationship between technology and human physiology, focusing on the role of physical activity in mitigating the long-term drawbacks of automation and digitalization.

Digitalization

Impacts on Human Physiology

- **Sedentary Behavior and Prolonged Sitting:** Increased digitization leads to more sedentary lifestyles, as people spend long hours sitting at computers or operating machinery. This can contribute to various health issues such as obesity, cardiovascular problems, and musculoskeletal disorders.
- **Disrupted Sleep Patterns:** Excessive days long screen time, especially before bedtime, can disrupt sleep patterns. The blue light emitted by screens can interfere with the production of melatonin, the hormone responsible for regulating sleep, leading to difficulty falling asleep and poor sleep quality.

Eye Strain and Vision Problems

Extended screen time from digitalization can lead to eye strain, dry eyes, and other vision problems. Staring at screens for prolonged periods without breaks can cause digital eye strain, also known as computer vision syndrome.

Mental Health Challenges

Constant connectivity and reliance on digital devices can lead to stress, anxiety, and depression. Social media use, in particular, has been linked to negative mental health outcomes such as decreased self-esteem and increased feelings of loneliness.

Musculoskeletal Issues

- **Muscle Imbalance:** Repetitive motions and prolonged static postures associated with operating digital devices or automated machinery can lead to muscle imbalances. Certain muscles may become overused and tight, while others may weaken from underuse, resulting in imbalances that contribute to discomfort and injury.

- **Repetitive Strain Injuries (RSIs):** Continuous engagement in repetitive tasks without adequate rest or ergonomic support can lead to RSIs. These injuries, such as carpal tunnel syndrome, tendonitis, and bursitis, affect muscles, tendons, and joints and can result in pain, inflammation, and reduced mobility.
- **Postural Issues:** Maintaining poor posture while using digital devices or operating machinery can lead to postural issues such as rounded shoulders, forward head posture, and excessive curvature of the spine. Over time, these postural abnormalities can contribute to chronic musculoskeletal pain and dysfunction.
- **Joint Stiffness and Reduced Range of Motion:** Prolonged sitting or remaining in fixed positions for extended periods can lead to joint stiffness and reduced flexibility. Lack of movement can contribute to decreased synovial fluid production, which lubricates the joints, resulting in stiffness and discomfort.
- **Degenerative Changes:** Overuse of certain muscles and joints due to repetitive tasks can accelerate degenerative changes such as osteoarthritis. Continuous stress on the joints without adequate rest and recovery can lead to cartilage breakdown, inflammation, and pain over time.

Impact on Bone Health

Lack of weight-bearing physical activity, which is often associated with sedentary behavior and overdependence on digital devices, can negatively impact on bone health. Reduced bone density and strength may increase the risk of osteoporosis and fractures in the long term.

Generalized Weakness

Over Reliance on automated systems for tasks that require physical effort can lead to generalized weakness and deconditioning of the musculoskeletal system. This weakness may manifest as decreased muscle strength, endurance, and overall physical fitness.

Impact on Cardiovascular Health

Excessive screen time and sedentary behavior associated with digitalization can contribute to obesity, hypertension, and other cardiovascular risk factors. Additionally, social media and digital stressors may affect mental health, indirectly influencing cardiovascular health.

Dietary Habits and Nutrition

Digital platforms provide access to vast amounts of nutritional information, recipes, and meal planning tools, which can empower individuals to make healthier food choices. On the other hand, increased exposure to digital marketing, food delivery apps, and online food ordering can lead to overconsumption of processed foods high in sugar, salt, and unhealthy fats. Additionally, digital distractions during meal times may disrupt mindful eating practices, potentially leading to overeating or poor food choices.

PHYSICAL ACTIVITIES IN MITIGATING HEALTH ISSUES

Incorporating regular physical activity into daily routines is crucial for sustaining physical, mental, and emotional health, and for enhancing overall quality of life.

Importance of Regular Exercise

Regular exercise has multiple dimensional benefits on human organs functioning and the skeletal system performance. Regular exercise strengthens the heart, improves circulation, and reduces the risk of stroke and heart disease, whereas, it helps control weight by burning calories and increasing metabolism. On the functionalities side Exercise builds and maintains muscle mass, enhances flexibility, improves balance and coordination. Regular activity lowers the risk of chronic diseases such as diabetes, hypertension, and certain cancers as well as it reduces stress levels and promotes relaxation, it helps in Mood Improvement by releasing endorphins, which act as natural mood lifters, helping to alleviate symptoms of depression and anxiety beside help in Cognitive Functionalities by improves brain function, memory and can reduce the risk of cognitive decline and dementia in older adults. Engaging in consistent physical activity is associated with a longer and a quality lifespan in later years which is visible by persons Sleep Quality. Regular exercise promotes better sleep patterns and helps treat insomnia and other sleep disorders. On the Social side Participating in group sports or fitness classes fosters social interaction, teamwork, and a sense of community

RECOMMENDATIONS FOR INCORPORATING PHYSICAL ACTIVITY

Cardiovascular training

150 minutes of moderate-intensity or 75 minutes of high-intensity aerobic activity per week helps in developing cardiovascular strength and is helpful in weight management.

Strength training

Strength training with or without weight with 35-60 percent of strength twice a week is helpful in maintaining muscle strength and conditioning. Whereas

targeted muscle strength training can be done on alternative days. By altering percentage ratios and no of days, strength training can be used for weight management.

Flexibility and mobility training

All joints and muscles flexible and mobility exercises are most important for maintaining physical form and avoiding injuries. These have to perform honestly on a daily basis.

Weight management training

Monitoring person's age, weight, height and calorie intake and expenditure, lifestyle, habits, working hours, working condition and exercise history. Exercise modules can be developed to get better results.

Specific target zone training

This kind of training is required when a person develops deformities due to prolonged use of particular muscle or posture. Daily, twice or thrice format specific strength and conditioning exercises are performed to correct weakness.

Recreation and group games and training

Games are always played in groups which develop the confidence, fighting spirit, bonding, caring , losing and winning acceptance. Playing games not only developed psychological and behavioral traits but also developed strength, speed, stamina, coordination and status in society.

STRATEGIES FOR PROMOTING PHYSICAL ACTIVITY IN A DIGITALIZED SOCIETY

Promoting physical activity in a digitalized society is always a challenging job, but strategically we can engage and encourage people to stay active:

- **Integrate Technology with Fitness:** Our aim is to reduce screen time and dependency on electronic devices still some of the technology was helpful for motivating to adopt fitness resign.
- **Fitness Apps and Wearables:** Utilize fitness tracking apps and wearable devices to monitor physical activity, set goals, and provide reminders. These tools can gamify fitness, making it more engaging.
- **Virtual Fitness Classes:** Offer online fitness classes that people can join from home. Platforms like Zoom or dedicated fitness apps can provide a range of classes from yoga to high-intensity interval training (HIIT).

Leverage Social Media

Challenges and Competitions: Organize fitness challenges and competitions on social media to motivate people through friendly competition.

Influencers and Role Models: Collaborate with fitness influencers who can share workouts, tips, and motivate their followers to stay active.

Promote Active Transportation

Cycling and Walking: Encourage walking or cycling for short commutes. Implement bike-sharing programs and create pedestrian-friendly environments.

Public Transport: Advocate for the use of public transport, which often involves walking to and from stops.

Workplace Initiatives

Active Breaks : Encourage employees to take short, active breaks during the workday. This could include stretching, walking meetings, or standing desks.

Corporate Wellness Programs: Implement comprehensive wellness programs that offer fitness classes, gym memberships, or incentives for active lifestyles.

Community Programs

Local Fitness Events: Organize community events like fun runs, sports leagues, or outdoor fitness classes.

Parks and Recreation: Invest in local parks and recreational facilities that provide spaces for physical activity.

Educational Campaigns

Health Education: Run campaigns to educate the public on the benefits of physical activity and how to incorporate it into daily life.

School Programs: Integrate physical education and active play into school curriculums to establish healthy habits from a young age.

Policy and Infrastructure

Urban Planning: Design cities with ample green spaces, pedestrian zones, and bike lanes to make physical activity convenient and enjoyable.

Health Policies: Advocate for policies that support physical activity, such as funding for public sports facilities and community fitness programs.

Personal Approach

Tailored Programs: Develop personalized fitness programs based on individual preferences, fitness levels, and goals.

Behavioral Insights: Use data and behavioral science to understand what motivates individuals to be active and design interventions accordingly.

Conclusion

Automation and digitalization have revolutionized human life, but they also pose significant challenges to human physiology. Sedentary behaviors and decreased physical activity associated with technology use can have detrimental effects on health and well-being. However, by recognizing the importance of physical activity and implementing strategies to promote an active lifestyle, we can mitigate the long-term drawbacks of automation and digitalization. By fostering a culture of movement and prioritizing human health, we can harness the benefits of technology while ensuring a healthier future for generations to come.

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