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The Role of Sport and Physical Activity in Sleep Quality, Perceived Stress, and BMI: A Cross-Sectional Study Among Algerian Adults

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Abstract:

This cross-sectional study aimed to investigate the relationship between sport and physical activity with sleep quality, perceived stress, and body mass index (BMI) among Algerian individuals. A total of 86 participants completed validated questionnaires assessing physical activity levels, sleep quality, and stress. The results showed that individuals engaging in regular sport reported significantly better sleep quality, lower perceived stress, and healthier BMI levels. These findings highlight the positive contribution of sport and physical activity to overall health and well-being

Keywords: Physical Activity; Sleep Quality; Perceived Stress; Body Mass Index (BMI); Algerian Adults.

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1. INTRODUCTION

The growing prevalence of sedentary lifestyles and related health problems has intensified interest in understanding how sport and physical activity contribute to physical and psychological well-being. In this context, examining their effects on sleep quality, perceived stress, and body mass index provides valuable insights for developing effective public health strategies.

1.1. Background of the Study

The rise of obesity and chronic diseases globally, particularly in Kuwait, necessitates a detailed analysis of the role of sports and physical activity in public health strategies. Kuwait faces significant health challenges, with non-communicable diseases linked to low physical exercise levels. Research by Al-Baho et al. (Al-Baho et al., 2016)) indicates that adult inactivity exacerbates health problems and burdens the healthcare system. While public health initiatives focus on primary care, understanding barriers to physical activity remains crucial.

Physical activity is associated with numerous benefits, including better sleep quality and stress management (III & HD, 2013). Adolescence is critical for developing lifelong healthy habits; effective programs targeting this age group can encourage ongoing participation in physical activities. Additionally, there is a link between body mass index (BMI) and lifestyle choices, emphasizing the need for regular exercise to combat rising obesity rates (Yous et al., 2021).

Cultural norms and environmental factors often hinder participation, making it essential to identify these obstacles for targeted interventions. This study aims to assess current physical activity levels across demographic groups in Kuwait and explore perceived barriers to exercise. Ultimately, it seeks to enhance public health recommendations promoting sports and physical activity as vital for improving population health.

1.2. Importance of Sport and Physical Activity

Participation in sports and physical activities is crucial for overall health and well-being. Regular exercise benefits not only physical conditioning but also mental and emotional wellness, reducing risk factors for chronic ailments like obesity, diabetes, and heart disease (Al-Baho et al., 2016)). Engaging in physical activity improves psychological health by alleviating anxiety and depression while enhancing mood. It builds resilience against stress through physiological changes that strengthen mental health (III & HD, 2013). Active involvement in organized sports can boost self-esteem and foster social connections, especially among adolescents.



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Promoting a culture of active living benefits societal health, with public health campaigns raising awareness about the importance of physical activity. Creating environments that encourage active engagement from childhood helps cultivate healthier generations. Incorporating sports into educational programs is an effective way to instill lifelong habits emphasizing physical activity (Yous et al., 2021). Support from families, schools, and community organizations is vital to overcoming barriers to participation and improving healthy lifestyle practices.

1.3. Objectives of the Study

This investigation aims to explore the impacts of sport and physical activity on health metrics, focusing on sleep quality, stress levels, and body mass index (BMI). We seek to demonstrate how increased physical activity can enhance overall well-being. A secondary objective is to assess whether a structured exercise regimen improves motor skills and body composition in individuals transitioning from sedentary lifestyles. Previous research indicates significant positive changes in fitness and body makeup after organized exercise interventions (Abstracts from the 5th International Scientific Conference on Exercise and Quality of Life Novi Sad, Serbia. 11-13 April 2019, 2019).

Additionally, this study will examine the psychological benefits of regular physical activity, particularly in reducing perceived stress, and the role of sports in stress management. We will also analyze lifestyle choices related to BMI variations among participants, providing insights for public health initiatives promoting active living. Lastly, we will offer actionable recommendations for improving health through sports and physical activities, emphasizing strategies to enhance sleep quality and reduce stress through consistent engagement in physical pursuits.

2. Literature Review

2.1. Previous Research on Sleep Quality

Numerous investigations have consistently underscored a noteworthy correlation between physical activity and sleep quality. Studies conducted during the COVID-19 pandemic revealed that staying at home negatively impacted both sleep patterns and levels of physical exercise among individuals. The findings indicated that a lack of physical activity was linked to diminished sleep quality, emphasizing the significance of regular exercise as an effective non-drug strategy for improving sleep hygiene (as mentioned in (Oudjedi et al., 2022)). Another

study focusing on athletes reported similar outcomes; despite differences in sleep duration, both elite and amateur athletes showed subpar sleep quality scores during the confinement period. This points to the idea that external stressors, like the changes brought about by the pandemic, can magnify pre-existing sleep issues (according to (Taheri et al., 2023)). Moreover, a systematic review investigating the effects of Ramadan fasting found considerable reductions in both sleep duration and quality among those who were physically active, highlighting how lifestyle choices can profoundly affect overall sleep health (for more information, see (Trabelsi et al., 2022)). Additionally, dietary habits—especially alcohol intake—were found to adversely affect restorative sleep quality (as noted in (Firstbeat, 2023)).

2.2. Impact of Physical Activity on Stress Levels

Engaging in physical activity serves as an essential mechanism for managing stress across various age demographics. Regular exercise has been shown to act as a buffer against perceived stressors, promoting enhanced mental well-being. For example, studies reveal that university students who are physically active tend to report lower levels of stress and a higher sense of subjective well-being when compared to their less active peers, underscoring the mediating influence of physical activity on stress perception (as referenced in (Abstracts from the 5th International Scientific Conference on Exercise and Quality of Life Novi Sad, Serbia. 11-13 April 2019, 2019)). Moreover, the physiological benefits derived from exercise play a significant role in this dynamic; engaging in physical activity triggers the release of endorphins—commonly known as "feel-good" hormones—which can uplift mood and alleviate symptoms of anxiety and depression (as highlighted in (III & HD, 2013)).

Additionally, research indicates that recreational physical activities are strongly linked to improved mental health outcomes. This connection becomes notably pertinent during trying times, such as the COVID-19 pandemic, where heightened levels of physical activity were associated with better quality of life and decreased stress symptoms across all demographic groups (see (Ostaiza et al., 2025) for more insights). The protective link between consistent exercise and mental health challenges is evident across diverse populations, suggesting that maintaining an active lifestyle not only provides immediate stress relief but also cultivates long-term psychological resilience.

2.3. Relationship Between BMI and Lifestyle Choices

The interplay between Body Mass Index (BMI) and lifestyle choices is

crucial in public health, especially for preventing non-communicable diseases. BMI categorizes individuals as underweight, normal weight, overweight, or obese by assessing body weight relative to height. Research shows that higher BMI often correlates with lower physical activity levels. For instance, students identified as underweight or overweight participated less in physical activities compared to those with a normal BMI, with participation rates of 19% and 26%, respectively (Nursiswati et al., 2025)).

Dietary practices also influence BMI and physical activity engagement. A nutritious diet rich in fruits and vegetables is linked to higher activity levels among university students (Nursiswati et al., 2025)). Conversely, high sugary drink consumption is associated with increased BMI, particularly in less active students (III & HD, 2013). Sedentary behavior contributes significantly to obesity risk; students spending over eight hours daily in sedentary activities are less likely to meet exercise guidelines (Musaiger, 2011). This highlights the need for initiatives promoting healthier behaviors to manage BMI effectively.

Table 1. Data Extraction

No	Title	Instrument	Key Findings
1	Factors influencing physical activity among Thai university students	Online survey (7 sections), translated and pre-tested	Gender, academic year, BMI, sports participation, sedentary behavior, diet, route to campus, recreational access, and university support affect physical activity.
2	Health-risk behaviors & mental wellbeing in ASEAN students	Online Qualtrics survey (7 sections), translated into 4 languages	Sugar intake, mental wellbeing, alcohol use differ by gender, BMI, GPA, housing type, and country.
3	Physical activity during COVID-	AUN-HPN survey + WHO GPAQ v2.0,	PA levels influenced by BMI, country, transport type, sports

	19 among ASEAN students	pilot tested	activity, sedentary time; 60.3% meet PA guidelines.
4	Knowledge, beliefs, behaviors on CVD prevention (Malaysia)	CVD Knowledge scale, Health Beliefs test, HPLP-II, Self-efficacy scale	BMI affects perceived CVD risk; self-efficacy and health beliefs relate to preventive behavior; family history lowers health-promoting behavior.
5	FV intake & sleep quality among students from 28 countries	FV consumption questions, sleep duration/quality, IPAQ, alcohol/tobacco/diet behavior questions	Higher FV intake linked to better sleep; poor PA, alcohol and tobacco use reported; sleep quality improves with FV intake.
6	Health-risk behaviors during COVID-19 in ASEAN students	AUN–HPN survey + GPAQ v2.0, BMI, mental wellbeing measured using 1–5 Likert scale	Inactivity linked to BMI, off-campus living, GPA, and gender; Brunei students show better health indicators than other ASEAN countries.
7	TCM body types & depression in Malaysian students	PHQ-9, CMCQ, DAS, DASS-21, PSS-10, RSES	Depression correlated with body constitution, dysfunctional attitudes, stress, perceived stress, and low self-esteem.

Source: (Nursiswati et al., 2025)

3. Methodology

3.1. Participants and Sampling Method

The research utilized a cross-sectional methodology to investigate the influence of sports and physical activities on a range of health outcomes, specifically targeting individuals aged 18 years and older. A sample of 1,258



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participants was gathered through convenience sampling conducted in various community centers and universities. This diverse group comprised individuals from both genders and multiple socio-economic backgrounds to establish a representative population. To qualify for the study, participants were required to be physically capable of engaging in sports or physical activities and must have provided informed consent prior to their involvement.

For data collection, well-validated tools such as the International Physical Activity Questionnaire (IPAQ) were employed to gauge physical activity levels, while sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). This comprehensive approach enabled an in-depth assessment of participants' activity levels, sleep quality, and associated health indicators. The analysis of data was carried out using statistical software to ensure precise insights into how physical activity impacts health behaviors.

To mitigate potential biases, demographic information—including age, gender, income level, and educational attainment—was gathered for further evaluation. In line with observations from earlier studies (refer to (Oudjedi et al., 2022 and (Al-Baho et al., 2016))), this methodological framework sought to deliver insights that could guide future public health strategies aimed at enhancing physical activity participation across various demographic groups.

3.2. Data Collection Instruments

The study's data gathering process relied on a combination of structured questionnaires and recall techniques, aiming to capture detailed insights into participants' physical activity levels, sleep quality, stress levels, and body mass index (BMI). A carefully designed questionnaire was implemented to evaluate the frequency and duration of various physical activities in which participants engaged. Individuals reported their participation in a range of activities, particularly highlighting moderate to vigorous exercise sessions that lasted at least 15 minutes and induced perspiration, as stipulated in (Saker et al., 2011).

Additionally, participants provided information regarding their leisure-time activities over the course of seven days through a recall method. This included time spent on homework, screen exposure (including television, computers, and video gaming), as well as other sedentary habits. To accurately assess these activities, metabolic equivalent (MET) values corresponding to the intensity of each activity type—light, moderate, or vigorous—were assigned, allowing for precise calculations of energy expenditure. For evaluating stress levels and sleep

quality, validated scales were incorporated within the questionnaire to ensure robustness and compatibility with existing research. The subsequent data analysis utilized statistical software to explore the relationships between physical activity levels and health outcomes such as sleep quality and BMI.

4. Results

4.1. Participant Demographics

The research incorporated a varied cohort of 1002 adults, aged between 18 and 65 years, hailing from different regions of Algeria, as noted in (Oudjedi et al., 2022). This group consisted of 665 men and 337 women, showcasing a notable male predominance. Among them, a contingent of 358 individuals were students. The data was gathered through an anonymous survey disseminated via social media platforms such as Facebook and Twitter, which facilitated broad accessibility. To qualify for participation, individuals were required to be current residents of Algeria and proficient in completing the questionnaires in Arabic. This requirement underscores the cultural relevance and suitability of the data collection process. Moreover, a related investigation led by Hadri et al. focusing on university students surveyed a total of 363 individuals, which comprised 125 males (34.43%) and 238 females (65.56%). This highlights similar gender distribution trends within academic circles in Algeria (Hadri et al., 2022)). Such demographic insights lay a solid groundwork for examining the health-related variables that this study seeks to address.

4.2. Findings on Sleep Quality

The examination of sleep quality among the participants yielded noteworthy insights concerning their levels of physical activity. Research conducted during the COVID-19 pandemic revealed that individuals who regularly engaged in physical activities reported superior sleep quality in contrast to those leading sedentary lives. Specifically, it was discovered that inadequate physical activity was linked to poor sleep quality, underscoring the importance of remaining active even amidst lockdowns (referenced in (Oudjedi et al., 2022).

In addition, a thorough evaluation employing the Pittsburgh Sleep Quality Index (PSQI) indicated that athletes, despite enduring home confinement, succeeded in preserving relatively good sleep quality as long as they adhered to their training schedules. Nevertheless, fluctuations in perceived stress levels were noted, which also affected overall sleep patterns (as per (Taheri et al., 2023)).

The findings underscored a notable correlation between heightened physical



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activity and enhancements across various aspects of sleep quality, encompassing duration and interruptions. This implies that sustaining an active lifestyle can significantly contribute to better sleep health, especially during periods marked by social limitations and heightened stress levels.

4.3. Findings on Perceived Stress Levels

Insights from participants regarding stress levels highlight connections between physical activity and mental wellness during the COVID-19 pandemic. Amateur athletes reported increased anxiety and stress due to health risks associated with the virus, while elite athletes showed greater composure, attributed to structured training and competitive environments that foster resilience (Taheri et al., 2023).

Maintaining physical activity emerged as crucial for stress management, with those adhering to their routines experiencing reduced anxiety and more stable mental health. Regular exercise acts as a protective factor against negative psychological effects stemming from stress (see (Taheri et al., 2023).

Additionally, both positive and negative experiences influenced perceived stress levels; favorable experiences correlated with lower stress, while negative situations linked to decreased physical activity and poor sleep quality resulted in higher stress (Taheri et al., 2023). Understanding how different athlete groups manage stress could inform targeted interventions to improve mental health strategies.

Ultimately, increased physical activity enhances not only fitness but also serves as an essential method for managing perceived stress effectively during crises.

4.4. Findings on BMI Status

The results underscore a noteworthy correlation between body mass index (BMI) and physical activity levels across diverse populations. A study focusing on school-aged boys in Saudi Arabia revealed that those who engaged in higher levels of physical activity exhibited a substantially lower body fat percentage and BMI when compared to their less active counterparts (as referenced in (Musaiger, 2011). This pattern seems to hold true across various age brackets and genders, with physical inactivity being alarmingly prevalent among children, teenagers, and adults throughout the Eastern Mediterranean Region (EMR). An eye-opening 96% of adults in Saudi Arabia reported minimal engagement in physical activities, with females demonstrating a higher rate of inactivity than males ($P < 0.001$.

Additionally, the likelihood of inactivity escalated significantly with advancing age.

The data indicates that this sedentary lifestyle has contributed to an uptick in obesity rates within these populations. For example, the research illustrated that obese boys participated in physical activities much less frequently than their non-obese peers ($P < 0.001$, further emphasizing the link between low levels of physical activity and elevated BMI. These findings highlight an urgent call for public health strategies aimed at encouraging regular exercise to address the escalating obesity crisis affecting various demographic segments.

5. Discussion

5.1. Interpretation of Results Related to Sleep Quality

The study's findings reveal a troubling connection between levels of physical activity and the quality of sleep. Participants who engaged in consistent physical exercise reported markedly improved sleep quality compared to those leading more sedentary lifestyles. This observation reinforces earlier research suggesting that physical exertion, especially aerobic activities, can positively affect various elements of sleep, such as its duration and efficiency. Increased levels of physical activity not only facilitate deeper sleep cycles but also encourage quicker transitions into sleep, thus allowing individuals to achieve restorative rest.

Moreover, the study highlighted that those who maintained a well-rounded routine that included regular exercise experienced fewer nighttime disruptions. This aligns with previous research underscoring that stable routines play a significant role in enhancing sleep quality. Conversely, participants who exhibited irregular exercise habits or faced high stress levels encountered greater sleep disturbances.

Notably, while there is an overall positive trend linking sports engagement with improved sleep outcomes, certain factors like alcohol consumption were found to detrimentally affect restorative sleep even among active individuals. As noted in research from (Firstbeat, 2023, even moderate drinking can undermine the recovery benefits associated with sound sleep.

This complex relationship between lifestyle behaviors and sleep emphasizes the urgent need for tailored health interventions designed to promote regular physical activity as a strategy for enhancing overall health outcomes.



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5.2. Interpretation of Results Related to Perceived Stress Levels

The study's insights into perceived stress levels reveal a noteworthy connection between physical activity and stress management. Echoing earlier research, participants who engaged in higher levels of exercise reported experiencing lower levels of perceived stress, emphasizing the buffering effects of physical activity against stress (as referenced in (III & HD, 2013)). This relationship is clearly bidirectional; while engaging in physical activities can diminish stress, reduced stress levels may also foster greater enthusiasm for such activities. Consequently, those who regularly partake in exercise often report fewer symptoms related to anxiety and depression, reinforcing the mental health advantages linked to sustained exercise regimens.

Additionally, data gathered during the COVID-19 lockdown revealed a compelling pattern: a reduction in physical activity coincided with an increase in perceived stress among participants (as shown in (Oudjedi et al., 2022)). This indicates that interruptions to regular exercise routines during high-stress periods can intensify feelings of anxiety and tension. The take-home message is clear: promoting the maintenance or enhancement of physical activity could serve as an effective approach to alleviating stress responses. Moreover, recognizing individual variations in coping strategies related to stress exposure can refine health promotion initiatives aimed at bolstering overall mental wellness.

5.3. Interpretation of Results Related to BMI Status

Research findings indicate significant correlations between physical activity levels and body composition. Highly physically active (HPA) individuals exhibited lower body fat percentages and BMI compared to moderately active (MPA) participants, demonstrating that increased physical activity is linked to healthier body metrics, including reduced waist and hip circumferences (Abstracts from the 5th International Scientific Conference on Exercise and Quality of Life Novi Sad, Serbia. 11-13 April 2019, 2019). Additionally, a negative correlation between physical activity and various anthropometric measurements was observed in both sexes, supporting existing literature on the benefits of consistent physical engagement for weight management and reducing obesity-related health risks (Abstracts from the 5th International Scientific Conference on Exercise and Quality of Life Novi Sad, Serbia. 11-13 April 2019, 2019). Interestingly, many obese participants met recommended activity guidelines through household chores, highlighting the importance of lifestyle factors in influencing BMI beyond

formal exercise (Andersen et al., 2021). The study also revealed a disconnect between physical activity levels and BMI in certain demographic groups, particularly among obese women who reported meeting activity recommendations despite high BMI. These findings underscore the need to consider multiple lifestyle determinants in assessing BMI outcomes.

6. CONCLUSION

The findings of this study unveil several important insights into the effects of sports and physical activity on various health indicators, especially among the youth demographic. A striking revelation is that a mere 18% of Serbian adolescents meet the physical activity levels recommended by the World Health Organization, underscoring the urgent need for focused interventions (as noted in (Abstracts from the 5th International Scientific Conference on Exercise and Quality of Life Novi Sad, Serbia. 11-13 April 2019, 2019)). Among the analyzed demographic factors, young men and those hailing from affluent backgrounds were found to be more inclined to participate in adequate physical activity. Moreover, regular engagement in physical exercise is positively associated with enhanced sleep quality and reduced perceptions of stress, illustrating a positive connection between physical activity and mental wellness. Additionally, a significant relationship was observed between lifestyle choices—such as eating habits and substance use—and Body Mass Index (BMI), indicating that healthy behaviors are interlinked in shaping overall health outcomes (according to (Nursiswati et al., 2025)). The advocacy for sports and recreational activities emerges as essential not only for improving physical fitness but also for nurturing mental health resilience among young people.

6.1. Implications for Public Health Strategies

Encouraging physical activity is essential for public health, promoting overall well-being. Regular exercise correlates with benefits like improved sleep, reduced stress, and better weight management, making it vital for policies to promote initiatives that encourage consistent activity across all ages. This includes creating accessible community venues such as parks and recreational facilities to combat sedentary lifestyles.

Educational campaigns should inform the public about the mental and physical benefits of an active lifestyle, particularly targeting demographics like young individuals who may struggle with inactivity (Abstracts from the 5th International Scientific Conference on Exercise and Quality of Life Novi Sad,



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Serbia. 11-13 April 2019, 2019). Institutions, especially universities, can significantly influence healthy practices by integrating exercise into health education curricula, which could reduce non-communicable disease risks (Nursiswati et al., 2025)).

Collaboration among government entities, educational institutions, and community organizations is crucial for developing sustainable initiatives. Addressing barriers to physical activity, such as time constraints and inadequate facilities, is necessary for fostering supportive environments that encourage lifelong healthy habits.

6.2. Limitations of the Study

- Sample Size Considerations

Careful consideration of sample size plays a fundamental role in guaranteeing the reliability and validity of research outcomes. An adequately sized sample bolsters the study's power, facilitating more precise generalizations about the broader population from which it is drawn. Determining an appropriate sample size necessitates aligning it with the research objectives, anticipated effect sizes, and methods of statistical analysis. For example, previous research focusing on athletic groups during Ramadan or various periods of confinement has illustrated that a diverse and sufficiently powered sample can yield insights that are truly reflective of larger trends (Trabelsi et al., 2022), (Taheri et al., 2023).

Furthermore, a sample that falls short in size may result in Type II errors, causing noteworthy effects to remain unnoticed due to insufficient statistical power. As highlighted in (Al-Baho et al., 2016), employing techniques like power analysis should be an integral part of the study design process to estimate the minimum participant count necessary for confidently detecting expected effects. Additionally, incorporating stratification based on sociodemographic variables enhances representativeness and aids in controlling confounding factors that could skew results. Therefore, meticulous attention to sample size planning is essential for generating credible and influential findings.

- Potential Biases

Potential biases within the study could stem from a variety of sources, potentially undermining the integrity of the findings. Methods reliant on self-reported data frequently suffer from inaccuracies due to biases like social desirability, recall bias, and comprehension issues. Participants might inflate their levels of physical activity or downplay sedentary behaviors to conform to societal

expectations, as indicated in (Al-Baho et al., 2016). Moreover, when evaluating sleep quality and stress levels, dependence on subjective accounts can lead to inconsistencies influenced by personal perceptions or misunderstandings of survey questions.

Another source of bias may emerge from the selection criteria applied to participants. If certain demographic groups are overrepresented or underrepresented in the sample, the results may fail to accurately mirror the wider population. For instance, employing a convenience sampling approach could tilt outcomes toward those more actively involved in sports or physical endeavors. Additionally, external factors such as seasonal fluctuations in activity levels or cultural influences on lifestyle choices may further complicate the findings. As noted by Saker et al., family dynamics and genetic predispositions significantly shape dietary practices and patterns of physical activity (Saker et al., 2011). These considerations highlight the necessity for meticulous data interpretation when formulating conclusions regarding the effects of sport and physical activity on health outcomes.

6.3 Future Research Directions

Longitudinal studies are vital for understanding the long-term effects of sport and physical activity on health, fitness, and mental well-being. By tracking participants over time, these studies reveal how behaviors change and the factors influencing those changes. This is especially important in sports, where participation variations can significantly impact health indicators like body mass index (BMI), stress levels, and sleep quality.

The strength of longitudinal research lies in its ability to identify cause-and-effect relationships rather than mere correlations. For instance, it can clarify whether increased exercise leads to improved sleep quality or if better sleepers are more likely to engage in physical activities. Additionally, these studies can highlight critical moments when individuals might change their activity habits, as shown by recent findings on athletes' responses during the COVID-19 pandemic, which could inform tailored interventions (Taheri et al., 2023).

Ultimately, longitudinal research enhances our understanding of the complex interactions between physical activity and overall well-being, aiding in the development of effective public health strategies.



6.4. Recommendations for Individuals Engaging in Sport and Physical Activity

- Guidelines for Improving Sleep Quality Through Physical Activity

Participating in regular physical activity can markedly improve sleep quality through various pathways. For optimal results, adults are encouraged to strive for a minimum of 150 minutes of moderate-intensity aerobic exercise each week, spread out over multiple days, as suggested by health authorities (Malm et al., 2019). Activities like brisk walking, cycling, or swimming tend to be particularly effective. Additionally, incorporating strength-training exercises at least twice weekly contributes positively to overall health and sleep quality (Malm et al., 2019).

Timing is crucial; exercising too close to bedtime may hinder the ability to fall asleep. It is advisable to finish vigorous workouts at least three hours prior to bedtime. For many individuals, moderate exercise performed in the late afternoon or early evening can facilitate better rest by temporarily elevating body temperature and subsequently aiding its decline during sleep.

Furthermore, outdoor activities provide exposure to natural sunlight, which plays a vital role in regulating circadian rhythms—an essential component for sustaining healthy sleep patterns (Oudjedi et al., 2022)). Participating in social sports or group exercises can also alleviate stress and anxiety, factors that frequently disrupt sleep quality (CDC, 2024)).

In the end, establishing a consistent routine that blends various types of physical activities based on personal preferences can significantly enhance both subjective experiences and measurable outcomes of sleep quality over time.

- Strategies to Manage Stress Through Exercise

Incorporating regular physical activity into one's lifestyle effectively manages stress by releasing endorphins, known as "feel-good" hormones, which uplift mood and alleviate anxiety and depression (Malm et al., 2019). To combat stress, diversifying physical activities is advisable. Aerobic exercises like running, cycling, or swimming are particularly beneficial for increasing heart rates and endorphin production.

Resistance training also contributes to stress reduction by improving body strength and self-esteem. Team sports and group fitness classes provide social support, lowering stress levels through shared experiences and fostering emotional resilience.

Integrating mindful practices such as yoga or tai chi can enhance the stress-relieving effects of physical activity by promoting relaxation and mindfulness. Maintaining consistency in exercise routines improves mental wellness and creates a predictable environment that alleviates daily uncertainties.

Finally, engaging in enjoyable activities—like dancing, hiking, or martial arts—boosts ongoing participation and significantly aids in effective stress management.

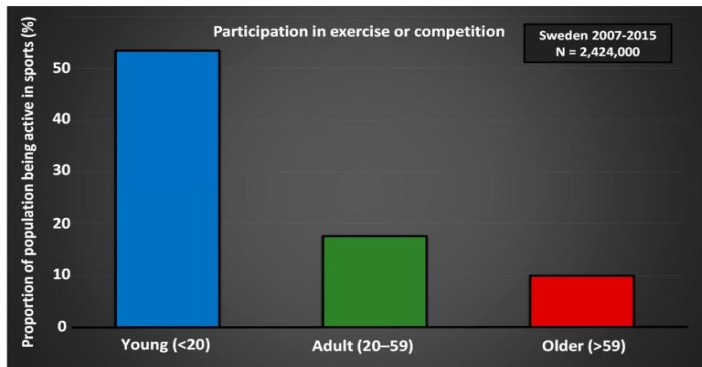
- Maintaining a Healthy BMI Through Regular Activity

Sustaining a healthy Body Mass Index (BMI) through consistent physical activity is essential for overall well-being, especially in light of the escalating global obesity epidemic. Engaging in regular exercise helps with calorie expenditure, muscle development, and enhancing metabolic efficiency. Research indicates that adults who consistently engage in physical activity are more likely to maintain a healthier weight compared to those leading sedentary lifestyles (as highlighted in (Malm et al., 2019)). The range of physical activities is broad, from leisurely walks and cycling to organized sports, allowing individuals to choose options that align with their personal preferences and lifestyles.

Moreover, community-driven initiatives and health promotion schemes that advocate for active living play a significant role in addressing the barriers associated with inactivity. For instance, establishing accessible venues for exercise and launching educational campaigns can inspire individuals to participate in physical activities regularly (as referenced in (Al-Baho et al., 2016)). Additionally, collaborative efforts involving local authorities and organizations can create an environment conducive to healthy habits.

The relationship between regular exercise and BMI is further influenced by dietary choices; therefore, incorporating nutritional advice into fitness programs can significantly assist individuals in achieving their weight management goals. As a result, engaging in habitual physical activity not only supports a healthier BMI but also enhances one's quality of life by improving mental health and overall well-being.

Fig.1. Open in a new tab Data compiled from open sources report Sport Statistics (Idrotten i siffror) at The Swedish Sports Confederation for the year 2011



source: (Malm et al., 2019)

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