



INFLUENCE OF SCREEN TIME ON ADOLESCENT FITNESS

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ABSTRACT: The widespread use of smart phones, tablets, computers, online games, social media, and streaming services has changed how adolescents spend their daily time. Digital tools offer valuable opportunities for learning, communication, and recreation. However, long periods of recreational screen use can increase sedentary behaviour and reduce time available for physical activity. This research paper examines how screen time affects physical activity and physical fitness among adolescents. A descriptive review method was used, drawing on research studies, international guidelines, and reports about screen use, sedentary behaviour, physical activity, and adolescent fitness. The evidence shows that greater sedentary screen use is linked to fewer chances for movement. It may also occur alongside lower physical activity levels and weaker health-related fitness. Heavy screen use can replace outdoor play, sports, active travel, and other forms of movement. The relationship is complex because digital activities can support learning and social contact, while some may also encourage exercise. A healthy 24-hour routine should include enough physical activity, limited sedentary time, and adequate sleep. Schools, families, physical education teachers, and local communities all have a role in building healthy screen habits and creating regular chances to be active. Managing recreational screen time, while expanding activity opportunities in schools and communities, may help adolescents develop better physical fitness.

KEYWORDS: Screen Time, Adolescents, Physical Activity, Physical Fitness, Sedentary Behaviour, Smartphone Physical Education, Health

INTRODUCTION: Adolescence is a key stage of development. During this period, young people experience major physical, mental, social, and behavioural changes. Habits formed during these years can affect health and lifestyle in adulthood. Physical activity is especially important because it supports healthy growth, fitness, mental well-being, social skills, and protection against several health risks. Adolescents also spend more time using digital devices. Smartphones, computers, tablets, televisions,

social media, online games, video-sharing sites, and streaming services are now part of daily life. These tools can support learning, communication, creativity, and access to information. Recreational use, however, often involves long periods of sitting. It may reduce time for sports, exercise, outdoor activities, walking, cycling, or active social contact.

The World Health Organization (WHO) defines sedentary behaviour as waking activity that requires little energy while a person sits, reclines, or lies down. Among children and adolescents, high levels of sedentary behaviour are linked to several poor health outcomes. These include increased body fat, weaker heart and metabolic health, lower fitness, and shorter sleep. The WHO therefore advises children and adolescents to reduce sedentary time, especially recreational screen time. (Iris) This concern has clear links to physical education. Schools offer an important setting for developing physical literacy, fitness, active habits, and healthy routines. The WHO reports that more than 80% of adolescents worldwide do not achieve the recommended level of physical activity. (World Health Organization) For this reason, the link between screen time and physical activity matters to physical education professionals, teachers, parents, policymakers, and researchers.

CONCEPT OF SCREEN TIME: Screen time generally means the amount of time a person spends using electronic devices with screens. These include smartphones, televisions, computers, tablets, gaming consoles, and similar devices. Screen use can be examined by its purpose, length, setting, and level of engagement. Screen time may include:

- Television viewing
- Smartphone
- Social media
- Online gaming
- Video streaming
- Internet browsing
- Computer use
- Educational digital activities
- Online communication

Recreational screen time should be separated from screen use for education. Digital tools used for schoolwork can support learning, while long periods of recreational use may increase sedentary time and replace physical activity. Screen time should not be judged only by whether technology is used. Its length, purpose, timing, and effect on daily behaviour also matter.

CONCEPT OF PHYSICAL ACTIVITY AMONG ADOLESCENTS: Physical activity is any body movement produced by the skeletal muscles that uses energy. For adolescents, it may include sports, exercise, walking, cycling, running, dancing, active games, recreation, physical education, and active travel. Physical activity is grouped by intensity:

- **Light-Intensity Physical Activity:** This level includes slow walking, light household tasks, and relaxed body movement.
- **Moderate-Intensity Physical Activity:** Examples include brisk walking, casual cycling, active games, and activities that moderately raise breathing and heart rate.
- **Vigorous-Intensity Physical Activity:** Examples include running, competitive sports, fast cycling, swimming, and high-intensity exercise.

The WHO recommends that children and adolescents aged 5 to 17 complete an average of at least 60 minutes of moderate-to-vigorous physical activity each day across the week. Vigorous aerobic activities, along with exercises that strengthen muscles and bones, should be included at least three days per week. (World Health Organization)

CONCEPT OF PHYSICAL FITNESS: Physical fitness is the ability to complete daily tasks effectively and efficiently without becoming overly tired. It also includes having enough energy for leisure activities and unexpected physical demands. Health-related physical fitness usually includes:

- Cardio respiratory endurance
- Muscular strength
- Muscular endurance
- Flexibility
- Body composition

Regular physical activity helps develop and maintain these areas. In contrast, too little activity and long periods of sitting can harm physical fitness.

Physical fitness during adolescence supports healthy growth, daily function, sports participation, recreation, and the formation of healthy habits that can continue throughout life.

RELATIONSHIP BETWEEN SCREEN TIME AND PHYSICAL ACTIVITY: The link between screen time and physical activity is often explained by time displacement. Adolescents have a limited number of hours each day. When much of their free time is spent watching videos, playing games, browsing social media, or using smart phones, less time may remain for outdoor play, sports, walking, and other physical activities.

For example: More recreational screen time -> More sitting -> Fewer chances to move -> Less physical activity -> Possible decline in physical fitness

This pattern is not always direct or the same for every adolescent. Some technologies can support movement through active video games, fitness apps, online exercise programs, sports tracking, and activity challenges. Research should therefore consider the type of screen use and the setting in which it occurs.

WHO guidelines stress the need to limit sedentary behaviour, especially recreational screen time, among children and adolescents. (Iris)

INFLUENCE OF SCREEN TIME ON PHYSICAL ACTIVITY LEVELS:

- **Displacement of Active Behaviour:** Long periods of recreational screen use can replace time that might otherwise support active behaviour. Time spent watching television, playing seated video games, or using social media could be used for outdoor games, sports, walking, cycling, or exercise.
- **Reduction in Outdoor Activities:** Heavy screen use may lead adolescents to stay indoors for long periods. Less time outdoors can reduce involvement in recreational physical activities.

- **Reduced Participation in Sports:** Adolescents who spend much of their free time with digital entertainment may have fewer chances or less interest in organized sports and other physical recreation.
- **Increased Sedentary Behaviour:** Many screen-based activities take place while sitting or reclining. Long periods in these positions can contribute to a less active daily routine.
- **Effects on Active Transportation:** In some settings, greater reliance on digital entertainment may occur alongside less walking and cycling. Promoting active travel can help increase physical activity among adolescents.

Screen time should therefore be assessed by more than the presence or absence of technology. Its duration, purpose, timing, and behavioural setting also matter.

INFLUENCE OF SCREEN TIME ON PHYSICAL FITNESS LEVELS: Excessive sedentary screen use may affect physical fitness by reducing the amount and intensity of physical activity among adolescents. This link may influence several areas of health-related fitness.

- **Cardio respiratory Endurance:** Less involvement in aerobic activities, including running, cycling, swimming, and active sports, may limit the development of cardiovascular endurance.
- **Muscular Strength and Endurance:** Regular movement and resistance exercises help build muscular strength and endurance. A sedentary lifestyle can reduce chances to take part in these activities.
- **Flexibility:** Physical inactivity may limit practice of movements that use the full range of motion. Stretching, yoga, gymnastics, and sports can help maintain and improve flexibility.
- **Body Composition:** Long periods of sedentary behaviour, along with too little physical activity, may create an energy imbalance and increase body fat. The WHO lists increased adiposity as a health outcome linked with higher sedentary behaviour in children and adolescents. (Iris)
- **Overall Functional Fitness:** Adolescents who stay physically active are more likely to build the functional skills needed for sport, recreation, and daily tasks.

FACTORS INFLUENCING SCREEN TIME AND PHYSICAL ACTIVITY: Several individual, family, school, and environmental factors shape the link between screen use and physical activity.

- **Age and Developmental Stage:** Screen habits and preferences for physical activity may change during adolescence.
- **Gender:** Access to sport, social expectations, safety concerns, and leisure preferences may affect both screen use and physical activity.
- **Family Environment:** Parental behaviour, household rules, access to devices, and chances for outdoor play can influence adolescent habits.
- **School Environment:** Physical education classes, sports facilities, extracurricular programmes, playgrounds, and active recreation can affect activity levels.
- **Peer Influence:** Friends and peer groups may encourage active participation or lead to longer periods of digital engagement.
- **Accessibility of Technology:** Easy access to smartphones, high-speed internet, gaming devices, and streaming services creates more opportunities for screen-based entertainment.
- **Urbanisation and Built Environment:** Parks, playgrounds, safe walking routes, cycling paths, and recreation centres can strongly affect opportunities for physical activity.
- **Academic Demands:** Digital devices may be needed for schoolwork, but heavy academic screen use can add to total sedentary time. Educational screen use should therefore be separated from optional recreational use.

THEORETICAL RELATIONSHIP BETWEEN SCREEN TIME, PHYSICAL ACTIVITY AND FITNESS: Behavioural Displacement Theory helps explain this relationship. It states that time spent on one activity reduces the time available for another. In this context:

- Excessive recreational screen time leads to increased sedentary behaviour.
- Increased sedentary behaviour leaves less time for physical activity.
- Less available time can reduce exercise and sports participation.
- Lower participation may lead to lower physical fitness.

The 24-Hour Movement Behaviour Framework offers another view. It treats physical activity, sedentary behaviour, and sleep as connected parts of a person's daily time budget. More time spent on one behaviour can reduce the time available for the others. Healthy adolescent development therefore depends on balance across the full day, rather than on one behaviour alone.

WHO guidelines also stress the need to consider physical activity and sedentary behaviour within the wider daily lifestyle. (World Health Organization)

RESEARCH METHODOLOGY: This study uses a descriptive, analytical, and review-based research method. It draws on secondary sources, including peer-reviewed studies, systematic reviews, international health guidelines, and reports on adolescent screen time, sedentary behaviour, physical activity, and physical fitness. The main areas reviewed include:

- Recreational screen time
- Sedentary behaviour
- Physical activity levels
- Health-related physical fitness
- Body composition
- Cardio respiratory fitness
- Muscular fitness
- Flexibility
- Lifestyle behaviour

The literature was examined to identify patterns and possible links between screen-based sedentary behaviour, physical activity, and fitness. The study does not claim that secondary evidence alone proves a cause-and-effect relationship. Instead, it brings together existing findings to describe how screen time may influence adolescent physical activity and fitness. Future empirical studies could measure screen time with a validated questionnaire or device-based monitoring. Physical fitness could be tested through the 20-m shuttle run, sit-ups, push-ups, handgrip strength, and the sit-and-reach test. BMI or other body-composition measures could also be included, depending on the research design.

EFFECTS OF EXCESSIVE SCREEN TIME ON ADOLESCENTS: High levels of recreational screen use may be linked to several health and behaviour concerns.

a. PHYSICAL EFFECTS:

- Less physical activity
- More time spent sitting

- Higher risk of unhealthy weight gain
- Lower physical fitness
- Poor posture
- Musculoskeletal pain or discomfort
- Fewer chances to spend time outdoors

b. PSYCHOLOGICAL AND BEHAVIOURAL EFFECTS

- Difficulty keeping healthy daily routines
- Less face-to-face interaction
- Possible disruption to sleep
- Lower involvement in recreational activities

The WHO evidence review reports that greater sedentary behaviour among children and adolescents is linked to lower fitness, shorter sleep duration, and other health concerns. (Iris) Screen use is not always harmful. Its purpose and setting are important. Educational tools, communication platforms, and technology that support physical activity can offer clear benefits.

ROLE OF PHYSICAL EDUCATION IN ADDRESSING EXCESSIVE SCREEN TIME: Physical education can help schools reduce sedentary lifestyles. PE gives adolescents regular chances to take part in moderate-to-vigorous activity and improve their physical skills. PE programmes can:

- Create more chances for movement.
- Improve physical fitness.
- Build motor skills.
- Encourage sports participation
- Support active lifestyles.
- Teach the value of health and exercise.
- Increase confidence during physical activity.
- Strengthen teamwork and social contact.

Schools can add active breaks, recreational clubs, sports events, yoga, fitness classes, walking programmes, and outdoor activities. These options give students more opportunities to move.

STRATEGIES TO REDUCE EXCESSIVE SCREEN TIME:

- **Establish Healthy Screen-Time Routines:** Families and schools should set clear, reasonable limits for recreational screen use. These limits should cover meal times, study periods, and the hour before bed.
- **Encourage Daily Physical Activity:** Adolescents should be encouraged to walk, cycle, play sports and games, exercise, dance, and take part in other enjoyable activities.
- **Promote Active Recreation:** Schools and families should offer alternatives to passive digital entertainment. Outdoor games, community sports, and recreational activities can help.
- **Encourage Active Breaks:** Brief movement breaks during long periods of sitting can interrupt sedentary behaviour and reduce the time spent inactive.
- **Promote Digital Physical Activity:** Technology is not only a source of concern. Fitness apps, activity trackers, online exercise programmes, and active games can encourage adolescents to move.
- **Strengthen Physical Education:** Schools should provide enough teaching time and resources for high-quality physical education.
- **Educate Parents and Students:** Health education should explain the links between sedentary behaviour, physical activity, sleep, and overall health.

DISCUSSION: Growing use of digital technology among adolescents brings both benefits and concerns for physical health. Screens now support education and communication, so avoiding them completely is neither practical nor helpful. The main concern is excessive recreational use, especially when it replaces physical activity, sleep, or other healthy habits. The evidence shows that sedentary behaviour and recreational screen use should be viewed as part of a wider lifestyle. WHO recommends reducing sedentary behaviour among children and adolescents and gives particular attention to recreational screen time. (Iris) WHO also reports that more than 80% of adolescents worldwide do not reach recommended physical activity levels. This finding highlights the need for programmes that create more chances to move. (World Health Organization) The link between screen time and fitness is complex. Adolescents who are less active may also prefer screen-based entertainment, so each behaviour may influence the other. Family life, income, school opportunities, neighborhood safety, access to facilities, peers, and personal preferences can affect both behaviours.

EDUCATIONAL IMPLICATIONS: These findings have several implications for physical education and school health programmes.

- Schools should offer regular opportunities for moderate-to-vigorous physical activity.
- Physical education should remain an essential part of the curriculum.
- Students should learn about sedentary behaviour and healthy digital habits.
- Teachers should include active breaks during long classroom sessions.
- Schools should expand sports and recreational options.
- Parents should help promote balanced technology use.
- Schools should offer inclusive activities for students with different physical abilities.
- Digital tools can support fitness apps, activity tracking, and active learning.
- Physical education teachers should encourage lifelong activity, not only competitive sport.
- School policies should address the combined effects of physical activity, sedentary behaviour, and sleep.

RECOMMENDATIONS:

- Adolescents should be encouraged to achieve recommended daily activity levels.
- Recreational screen time should be monitored and balanced with active recreation.
- Parents should set consistent household rules for recreational device use.
- Schools should strengthen physical education and extracurricular sports programmes.
- Walking and cycling should be encouraged when routes are safe and practical.
- Communities should provide safe parks, playgrounds, and sports facilities.
- Adolescents should take regular movement breaks during long periods of sitting.
- Physical activity programmes should be enjoyable, inclusive, suitable for the age group, and culturally appropriate.
- Future studies should combine objective measures, such as accelerometers or wearable devices, with self-reported screen-time data.
- Long-term research is needed to clarify the strength and direction of links between screen time, physical activity, and fitness.

CONCLUSION: Screen-based technology is now a regular part of adolescent life. However, too much recreational screen time can lead to long periods of sitting and fewer chances for physical activity. Lower activity levels may affect key areas of health-related fitness, such as cardio respiratory endurance, muscular fitness, body composition, and functional ability. The link between screen time and physical fitness depends on many factors, including family life, school, social conditions, personal habits, and the surrounding environment. The goal should be balanced technology use rather than removing technology altogether. Adolescents need time for healthy digital activities, regular exercise, sports, outdoor recreation, and enough sleep. Physical education plays a key role because schools give adolescents a planned setting to build physical skills, fitness, motivation, and lasting positive attitudes toward activity. Schools, teachers, parents, communities, and adolescents can work together to limit sedentary habits and support healthier patterns of physical activity.

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