

**IDENTIFYING THE COMMON SEDENTARY  
ACTIVITIES/BEHAVIOURS, LEVELS OF PHYSICAL ACTIVITY AND  
TRENDS AMONGST STUDENTS**

**Lisa Hartmann**

**Abstract.** *The purpose of this research was to investigate the common sedentary activities and behaviours of students here in the Middle East and across the world, whilst exploring levels of physical activity and trends amongst students. The review of literature concentrated on uncovering research from 2005 to 2015 with the aim of discussing and critically analysing the different author's points of view. During the review I have drawn on my own teaching experiences gained whilst living in the Middle East. The literature review has highlighted many causes of sedentary behaviour, and addressed the challenges that schools face when tackling the issue of sedentary students. The following factors that were associated with causing students to choose sedentary behaviours were identified amongst the research: health policies and strategies, parental education or influence, PE lessons and school environment (including effects on academic performance, snack, lunchtime breaks, and equipment available), participation in extra-curricular activities (involvement in sports teams, and the upsurge in use of technology), travel to and from school, and living in the UAE. In particular, the important role that schools play in the promotion and encouragement of physical activity, whilst reducing sedentary behaviours.*

**Key words/phrases:** *Sedentary students, Sedentary behaviours, Physical Education lessons, school health programs, Physical Activity levels, school health policies and procedures.*

## **Introduction**

### **Background and content**

The Department of Health, England (2010) outlines the significance of studying the health benefits of moderate to vigorous Physical Activity (PA), including activities such as cycling or fast walking. Participating in different forms of exercise is important at any age, and people of all ages should be encouraged to participate in PA so that health risk factors/lifestyle diseases can be prevented. Malina and Katzmarzyk (2006) summarised the need for daily PA and physical fitness in schools and the promotion of health among youths worldwide, and in doing so would eliminate the development of risk factors for several adult diseases.

Trost (2007) stated that schools have the opportunity to promote and emphasise the importance of regular PA, to reinforce the benefits associated with health and wellbeing and should build skills that support active lifestyles. Parents of school-aged children often rely on school health programs or PE lessons to provide enough opportunity for PA during and after school hours. Ogden (2006) agreed that the reduction in PA has put student's health at risk and she feels that it can't be justified by the education system. The increasing lack of PE and PA in and out of school is evident and the importance of reducing sedentary behaviours is of high importance. Almost half of the 208 state and private schools surveyed by the Dubai Health Authority (DHA), in 2012 discovered that schools allowed pupils to substitute PE classes with other activities, which is against regulations.

It is undeniable that the amount of PA students participate in has reduced over past years, and the reduction of participation in sedentary behaviours has significant benefits and rewards associated with it, such as reduced risk of cardio-metabolic disease, obesity and diabetes. Castelli, Hillman, Buck and Erwin (2007) agreed that there were many benefits of PA, and stated one of the many benefits of participating in PA was the potential it had to limit the frequency of risk factors related to cardiovascular disease in later life.

However, researchers are noticing an increase in very low levels of movement and an increase in time spent sitting, i.e. sedentary behaviour. British Heart Foundation National Centre (BHFNC), (2012) defined sedentary behaviour as a number of activities that involve very low energy expenditure, such as sitting while at work or school, watching television, using a computer or playing video games, reading, sitting while socialising with friends or family and sitting in a car or other form of motorised transport (e.g. school bus).

The inactivity crisis is especially prevalent in school-aged students. Tremblay, LeBlanc, Kho, Saunders, Larouche, Colley, Goldfield and Gorber (2011) documented that ‘only 7% of children and youth aged 6-19 years participate in at least 60 minutes of moderate-to vigorous intensity physical activity per day’ (p. 1). For students who choose a sedentary lifestyle, increases in PA are associated with many benefits that will prevent some or all of the above health problems that are caused by inactivity. Inactive can be used to describe someone who has chosen to

take part in insufficient amounts of moderate and vigorous physical activity. A student who obtains at least 60 minutes per day of moderate PA can still be considered as sedentary if they spend a lot of their time sitting or lying down.

### **Positionality**

I am Head of PE at an International School here in the UAE, the school in which I currently teach offers education to students aged 3-14 years. The Montessori and Cambridge curricula are followed throughout the school with intentions to offer Cambridge IGCSE and A-Level in the near future. There are currently 1800 students enrolled in the school representing 96 different nationalities. The sporting facilities includes two sports halls, one tennis court, a large sports field, a dance studio, two swimming pools and a grass areas for each grade group to play on at snack and lunchtimes. All outdoor areas are shaded and the indoor facilities are fully air conditioned, and students are encouraged to use these areas when available. A plan for the effective use of sporting facilities during lessons, snack, lunchtimes and after school is continually developed and improved to maximise use and increase PA. The plan was developed as a result of many PE lessons cancelled or removed from timetable, to allow for timetabling issues, and activities such as graduation, assemblies, exams and the inability to use outdoor facilities because of the extreme weather temperatures.

Having had a keen interest in sport, health and well-being whilst in school and throughout my further and higher education, I went on to advance my knowledge and understanding of PA. After a varied career that has included many roles in

sports and nutrition, I was then promoted to Head of PE. Since, I have become fascinated as to why educators are not doing more to increase PA and reduce sedentary behaviours. Addressing sedentary behaviours is very important to me, and is a prominent issue in my school. I am concerned that students whom choose to lead a sedentary lifestyle now will continue with these behaviours into early adulthood, and it will be harder to change their way of thinking and adopt important lifestyle changes if an intervention isn't put into place with immediate effect.

My passion is in education and as an expecting first-time mother I am more intrigued by the lack of health and fitness education throughout schools. The review of literature has steered to the conclusion that schools can do more to promote healthy living, by educating students, teachers and parents of the importance of PA in and out of school.

The following two research questions have been formulated, however, these have changed slightly since my initial proposal as I have decided not to focus on the IB curriculum. I will identify challenges, influencing factors, lifestyle choices and trends pertaining to sedentary behaviours and lack of PA here in the UAE and across the world. I hope by answering the questions I will be able to address a very important area of interest to me and what I believe is needed for much improvement and promotion in the UAE:

*What factors cause sedentary behaviour? And what are the challenges faced by schools when promoting PA and addressing sedentary students?*

Although levels of PA and sedentary activities/behaviours will be the focus of the literature review, there are several other factors that will be addressed throughout; what schools are doing or can do to address sedentary students, the consequence of living in the UAE, Physical Education (PE) lessons, review of health strategies, snack and lunch times, upsurge of technology, academic performance, modes of transport - to and from school, and parent and community influence. With doing so, gaining further insight into the best practices used in international schools across the world, at the same time as discovering new trends.

## **Methodology**

This involved an extensive literature review in a reflective manner. The articles derived from databases, accessible through the Murdoch university website, google scholar, ERIC, BASE and RefSeek. I used the following key words when continuing my search for literature: Sedentary students, sedentary behaviours, PE programs, school health programs, PA levels, existing school health policies and procedures. Both quantitative and qualitative research was used and reviewed throughout my research, and when analysing the literature found, I read the abstract first to make sure it was relevant to my research and of interest to my chosen topics, ascertaining if the selected article could help answer the outlined research questions. I consulted many International articles from across the world, irrespective of countries and cultures. There was limited research found in this region, highlighting the significance of my research, and I hope my study will fill the gap in the existing literature.

Throughout my research study I took into consideration many ethical issues such as ethnicity, objectivity, and replication. As this was not an empirical study, I didn't need permission from any external parties, such as parents, teachers or students. All authors and articles used have been cited throughout my research project and has been placed in the reference list. I have also taken special care not to disclose anyone's personal identity whilst reflecting.

### **Discussion and analysis**

It has been discussed that sedentary behaviours are not a new phenomenon. Hardy, Booth, and Okely (2007) deliberated how the lack of PA has led to many health problems, and the amount of students choosing to participate in a sedentary lifestyle has increased over the last couple of decades. It is suggested by Lowry, Lee, Fulton, Demissle and Kann (2013) that young people are more sedentary than previous generations due to many causes, such as personal, social and environmental factors that play a significant role when defining levels of PA.

Researchers, such as Colley, Garriguet, Adamo, Carson, Janssen, Timmons and Tremblay (2013) identified some of the factors that are positively associated with the reduction in sedentary behaviour, and these will be discussed in more detail. They include; health policies and strategies, parental education or influence, PE lessons and school environment (including effects on academic performance, snack, lunchtime breaks, and equipment available), participation in extra-curricular

activities (involvement in sports teams, and upsurge in use of technology), travel to and from school, living in the UAE (supportive environments) and cultural restrictions.

However, there are many reasons why sedentary behaviours are preferred, and concerns and difficulties that can cause students to choose this lifestyle choice over a more active lifestyle will be identified. It is highlighted by Tremblay et al (2011) that students are favoring to adopt a sedentary lifestyle, but it is necessary to explore the reasons why....

### **Health policies and strategies**

Friedrich, Caetano, Schiffner, Wagner, and Schuch (2015) stated the importance of schools and its privileged setting when developing health policies and strategies, they also highlighted the excellent opportunity they have for the implementation of health promotion programmes. The School Health Policies and Practices Study (SHIPPS), (2012) stated that policies developed by schools must provide students ‘opportunities to acquire the knowledge, attitudes, and skills necessary for making health-promoting decisions, achieving health literacy, adopting health enhancing behaviours, and promoting the health of others.’ (p.1.)

Langford, Bonell, Jones and Campbell (2015) identified the need for training and staff development as a critical factor for effective implementation. Story (2009) agreed that schools should ensure their policies state that teachers must have a minimum of undergraduate or graduate training in the subjects they are teaching. I

would have to agree, without knowledge and understanding, and adoption from the teachers, the policy could fail at the first hurdle. Teachers need to believe in what they are asking of students and parents. On-going training and professional development is integral to the development of the policy and must be provided by the school, and should consist of group work, one-on-one feedback and support. My experience has taught me that training cannot consist of a 'one off' session, constant reflection and reinforcement is required.

Hardy et al (2007) developed the Adolescent Sedentary Activity Questionnaire (ASAQ) with reference to students, parents and other literature. They identified activities 'included watching television/videos, DVD's, computers, e-games, and e-communication, study, reading, sitting with friends, telephone use, listening or playing music, motorized travel, hobbies and crafts, all performed out of school hours' (2007, p72). At my school, the identification of sedentary students will be made with the help of this questionnaire. The questionnaire will be sent to all parents at the beginning of the academic year (See appendix one and two), and was chosen as it had featured in many articles, and other schools had used the same approach. Parent's answers to the questionnaire has proved valuable, it provided information that could be used to identify the lifestyle habits and behaviours of students before and after school hours. The ASAQ evaluates the amount of time school-aged students spent on a list of sedentary activities. Initial feedback from teachers that have used the ASAQ was positive, and the same went for the parents and students.

My school is still identifying how best to develop its policy, and is working closely with other International schools in the community and by consulting with our sister schools, through observation and regular communication. In the discussion phase, the school addressed the development of the policy and best practice used by others, this was achieved collaboratively whilst outlining the responsibilities/duties of students, the school, parents and its community. The school also defined support procedures for teachers and students, and carefully crafted school guidelines. The importance of ensuring all of these protocols were established and investigated before implementation should not be underestimated.

However, it has been decided that students, parents and teachers will primarily focus on the following: Increased PE lessons, increased extra-curricular opportunities (such as activities before, during and after school), promotion of sports teams, snack and lunchtime opportunities, sporting events, field trips, parent seminars and talks on healthy eating and increased PA, all of which will involve and include where possible participation from the community.

The initial policy programme will be implemented to help reduce the amount of students choosing to participate in sedentary behaviours. It will provide teachers with the opportunity to calculate the daily, weekly and monthly participation of each student; and it was then agreed that special attention would be provided to those students that had been highlighted as a sedentary student. ‘A sedentary individual is different from someone who is considered inactive’, (BHFNC, 2012). As this is a

sensitive issue, each student will be addressed by the school nurse, with the support of teaching staff.

If schools can do more to successfully promote PA into the curriculum, and students receive the backing of their parents and the community, together a clear, thought-out health policy and strategy can be put into place. However, they must take into consideration all of the potential challenges and difficulties that schools may be faced when reducing sedentary behaviours and addressing sedentary students.

### **PE lessons and academic performance**

The quality of PE lessons is an ongoing cause for concern, and has been identified as a reason for students to choose a sedentary behaviour, and needs to be addressed to ensure all students are engaged and enjoy the lessons. In 2008, the Physical Activity Guidelines for Americans were released, and their recommendations for PE lessons was that students participate in a minimum of 60 minutes of PA every day, and the majority of this activity should be covered within the allotted PE lessons. Trudeau and Shephard (2005) discussed the limitation of many studies that have considered the impact of school PE lessons on the overall participation in PA of students. For some students, PE lessons, is the only opportunity students have to receive moderate to vigorous PA, and many students are not receiving the minimum PE lesson time recommended by the curriculum, due to a number of contributing factors, such as the availability of facilities or weather conditions.

Educational facilities such as sports halls and fields all need to be taken into consideration when schools are in the design process and should not be an after-thought. Design, and structure can impact how the school will support student's health, well-being and delivery of the curriculum during PE lessons. This is especially prevalent when taking into consideration weather conditions and climate of which the school is located. In the Middle East, students cannot play freely outside during the summer months due to the extreme heat, and all sports halls and facilities need to have adequate air conditioning. However, when PE is taken outside in the winter months, shading needs to be provided, in order for the students to play outside without risk of heat stroke, dehydration or sun burn. PE lessons need to be adapted to the facilities available to the teachers, without causing the students to partake in sedentary behaviours such as sitting, water breaks and waiting for instructions. Currently, PE lessons, do not always allow the time allocated to be utilised effectively, causing students and teachers to feel discouraged (Trudeau et al, 2005). If students are uninterested or lessons have been cancelled, this can be a contributing factor that will cause students to choose a sedentary behaviour over a more active lifestyle.

An increase in the time that is allocated to PE has been suggested by many researchers as a means to compensate for those students that are participating in a sedentary lifestyle. Story, Nanney, and Schwartz (2009) suggested that more PA should be added to the school day, and this could be taken from other subjects, without hindering academic performance. Trost (2007) identified that those students participating in regular PA maintained or improved their grades. This was also

endorsed by Van der Mars (2009) whom supported Trost, and understood that the increase of PA resulted in improvements in academic performance. Likewise, Wood (2007), reported that students whom chose to participate in PE and PA regularly, increased, maintained or improved their grades and scores throughout testing. Marsh (1992) disagreed, and felt that adding more PA to the school day would not help student's grades or increase their PA levels. I have found this to be untrue and believe that students should receive more opportunity to reduce sedentary behaviour during the school day. I introduced morning exercise, to our school day and this took place first thing in the morning and lasted approx.5 minutes, all students took part and at times had the opportunity to design the movements that took place. After the exercise all teachers noticed an increase in student concentration and eagerness to learn.

Additional benefits of reducing sedentary behaviours carried out during the school day, are believed to lead to an increase in attendance, concentration, time on task and standardized test scores, although not all researchers are in agreement. A cause of sedentary behaviour is believed to be the amount of time offered for PE classes, as this varies greatly, amongst schools, and can depend on pressures from external bodies, such as examining boards, inspectors or the Board of Directors to increase grades of students taking academic subjects. Johnson (2007) revealed that many school systems had downsized or eliminated PE lessons due to the belief that student's academic performance and test scores would see an improvement.

In addition to the PE curriculum, teachers in classrooms across the world do not always find it easy to organise their time due to pressure from management to achieve high test scores and utilise PE lessons to catch up on work and revise for tests and exams. Sudden changes made to school timetables do not provide the right message to students from a young age. The need to improve this is especially important for those schools who are striving to embed high quality health and fitness programmes and promote an active lifestyle. Budgetary constraints and increasing pressure to improve standardized test scores have also caused schools to question the value of PE lessons and PA. Although there is evidence to suggest that a more active/healthy lifestyle can have a major impact on student's concentration levels and learning, the promotion of health does not always factor as a priority. Some studies have disputed the above findings and believe there is no connection between increased PA and test scores (Ahamed, 2007).

Another sedentary behaviour discussed was the amount of time students spent sitting in a classroom whilst at school. It was identified that the majority of students spend around 6 hours a day sat in classrooms for almost 13 years of their life. Tremblay et al (2011) agreed that this was a major contributing factor, and they identified an average of 8.6 hours per day was spent by Canadian students being sedentary. Story et al (2009) presented a nice idea to incorporate more PA into other lessons, called 'Energizers', the idea is that students participate in ten-minute bouts of activity during all subjects.

## **PA during out of school hours and transportation**

It was the understanding of many researchers that if PE lessons were cancelled in school, that students would make up for the lack of PA during out of school hours. Dale, Corbin and Dale (2000) agreed and indicated that students did not always compensate for a sedentary school day by increasing their PA levels after school. Thus, emphasising the importance of providing opportunities to be active during the school day.

Those students that elect not to play outside, or choose non active methods of travel, and opt not to join a sports team have been identified to prefer a sedentary behaviour, such as chatting on the phone, watching television, studying or playing video games. Lubans, Boreham, Kelly and Foster (2011) discussed the decline in active travel to school across the world as a main contributor to a sedentary lifestyle. Trudeau et al (2005) highlighted safety as a reason why many parents choose transportation over a more active choice of travel for their children. Parents ‘opt for motorised commuting, rather than allowing their children to walk or cycle to and from school’ (p.96). Fortunately, this is not a cause for choosing a sedentary method of transportation in Dubai, as Dubai is very safe.

Langford et al (2015) described how some challenges are beyond the schools control, such as creating safe walking routes. This would lead to tackling local infrastructure, traffic management and access to public transport. The necessity for reducing sedentary methods of getting to school must be addressed, as active travel to and from school has the potential to improve health related fitness and increase

levels of PA. Schools in this region must address students and parents choosing sedentary methods of transportation, and by doing so, ensure the location of the school is close to nearby communities of those students attending the school, so that adequate foot paths can be put in place. This is in itself is a real challenge for schools in the Middle East, and seen as a contributor to choosing a sedentary behaviour.

Story et al (2009) described how seven American states have adopted policies that promote walking, running or cycling to and from school. This would be a great initiative for the Middle East to adopt, as lack of such initiative is evident. I can only identify one similar initiative launched in Abu Dhabi, (2009), which was '10,000 steps' (see appendix three), this was put in place to encourage walking throughout the day, and make students and parents aware of their lack of PA and sedentary habits.

Active modes of travel to and from school are not always accessible for those students residing here in the Middle East, due to lack of walk ways, parks or green areas, hotter climates, school buses and households that have their own drivers. Transportation to and from school, such as walking, cycling and skateboarding to school have all taken a back seat to motorized travel.

### **Upsurge in technology**

The main contributor to a sedentary lifestyle was identified as television viewing. Chen, Kim and Gao (2014) associated the reason for being inactive and students

participating in lack of PA with choosing to spend ‘3.6 to 8.1 hours being sedentary per day’ (p. 1). Carson, Janssen, Timmons and Tremblay (2013) also recognised television watching as the main contributor to a sedentary lifestyle. Hardy et al (2007) agreed that small screen recreation (SSR) is the primary contributor to time spent in sedentary behaviours among students. However, Currie (2004) felt that students engaged in many other sedentary behaviours such as doing homework and reading, and believed that they couldn’t always be avoided.

‘The American Academy of Paediatrics (AAP) recommends no more than 2 hours per day of television time and no more than one hour of screen-based entertainment per day’ (Collet et al, 2013). Although this recommendation has been identified, Colley, Garriguet, Adamo, and Malina et al (2006) disagreed, they believed lack of PA was not because of one single sedentary behaviour, they identified an increase in many sedentary behaviours over the past generation, such as ‘playing video games, personal computer activities, watching DVD’s, homework, extracurricular classes, motorized transport to school and other organised activities’ (p. S305).

With the increased accessibility of technology to students, (such as, access to the internet, desk top computers, laptops, I-pads, tablets, and mobile phones), and demands made by schools to integrate technology into lessons and homework, SSR has definitely contributed to a more sedentary lifestyle. Tremblay et al (2011) described how accessibility and popularity of SSR has increased, and students are using various modes of technology to complete school work during lessons and at home, and how more research by schools is needed, as there is a vast focus on media

engagement. This is a challenge for schools when addressing sedentary behaviours as they are torn between evolving with technology and promoting its use, whilst continuing to promote a healthy lifestyle and PA. The introduction of television and computer use over the years has been identified as a replacement for PA, and the Television Commission discovered that on average, each household had three televisions and it's common for children to have one in their bedroom.

### **Student participation and Parent involvement**

Another cause for sedentary behaviour is believed to be lack of parent involvement in students chosen activities or behaviours. Several studies, including that of Wang, Liu, Lv and Li (2015) believed that PA of students increased when they received support from a parent or guardian. Likewise, Lowry, Lee, Fulton, Demissie and Kann (2013) agreed that if students are busily engaged in activity, such as sports teams, they would less likely participate in a sedentary lifestyle. Occasionally, parents need to be involved, and it is integral they encourage and support their child. With encouragement from parents and teachers, students are more likely to participate in PA. Parents whom watch their children engage in PA, and immerse themselves in their child's activities often have a healthier home life. With this in mind, schools should encourage more parents to work together to promote PA in and out of school.

At my school it's evident that some students do not like to play team sports, and this can be a contributing factor when choosing to participate in a sedentary behaviour. However, if parents can encourage PA at home by providing different sporting

equipment that may spark the child's interest, and schools can provide daily opportunities for PA after school, a decreased participation in sedentary behaviours should be apparent.

Over the years I have received many excuses as to why some students do not want to participate in PE lessons, some valid and some made up in order to avoid participation. The majority of the time there is an underlying reason why a student may not wish to participate, and as a PE teacher it's our job to make sure they join the class by engaging them in conversation and finding out the real reason behind the excuse. Specialist PE teachers with substantial training should be the sole providers of well thought out classes, and schools should continue to provide professional development (PD) opportunities yearly.

### **Snack, lunch times and facilities**

Another cause of sedentary behaviour is the opportunity for students to play freely at snack, lunchtime or during after school hours, this is a challenge faced by schools when addressing sedentary lifestyles. Langford, Bonell, Jones and Campbell (2015) stated that schools should have access to and provide resources (such as sports equipment, stickers to promote fruit and vegetable intake or pedometers), as these are seen as highly useful when reducing sedentary behaviour and promoting and encouraging PA amongst students.

Verstraete, Cardon, De Clercq, and De Bourdeaudhuij (2006) documented the need for longer breaks, as they believe it's an important factor for the promotion of PA. They also believed that throughout break and lunchtimes, all students have the ability to be active, and if the play is unstructured, this would prepare them for adult activity, which is typically unstructured, they recommended that students are left to explore and discover.

Connolly and McKenzie (1995) disagreed with the above and recommended that students have access to a games curriculum during break times, play could be structured (with equipment provided). Unfortunately due to short snack and lunch breaks, most students can receive very little PA whilst at school. I agree that longer break times may increase the PA levels of students, and by providing equipment, thus may encourage active game playing. However, I believe more research is needed to investigate the length of break times and its impact on PA and reduction in sedentary behaviours.

### **Conclusion and Findings**

Whilst researching and writing the reflective literature review, I have uncovered many factors that contribute to a sedentary lifestyle here in the Middle East. Schools need to address the challenges identified, in order to reduce the amount of sedentary students, such as; cancelled or unstructured PE lessons, unclear or yet to be developed health policies and strategies, lack of PA opportunities during and

after school, transport to and from schools, the upsurge in technology and short snack and lunch breaks.

It has been identified that schools are important settings for both education and health, and was noted that throughout the world students are not participating in enough PA and are more sedentary in comparison to previous generations. With schools baring a huge responsibility, they need to focus on the education of their students and the benefits of leading an active lifestyle. Findings suggest that education is multi-faceted, and comprise of core subjects, specialist subjects and the personal, health and social welfare of the students, which include the promotion of healthy living, and regular PA.

Successful health policies, teaching strategies and learning experiences do not come without difficulties and challenges and can often take years to implement successfully. Story, Nanney and Schwartz (2009) stressed that one of the major challenges schools face when implementing health policies and strategies is the struggle to create a conducive environment for healthy eating and PA in and out of school hours. In order to decrease students risk to health, the school authority needs to take responsibility, and educate its students, in an appropriate manner that will in turn result in awareness and commitment to an active lifestyle. Including parents, students, school administrators, the community, the board of educators, and the canteen staff will permit for multiple points of view and achieve a high level of buy in and collaboration.

A major cause of concern identified by Story, Nannev and Schwartz (2009) was the PE lessons offered in schools, and the reduced levels of PA before, during and after school. Schools need to create an environment in which they promote healthy living and PA during PE. Verstraete et al (2006) endorsed the above statements, advocating the need for regular PE lessons and PA during the school day.

Literature specified and highlighted that the relationship between increased PA and academic performance requires more research. Evidence suggested that the academic mission of schools should be to provide more opportunities for PA, thus resulting in more focused learners, therefore, reducing student's participation in a sedentary lifestyle.

It was discussed by many researchers and all are in agreement that sedentary behaviours are associated with increased risk to health, which can lead to disease in later adult hood, such as, cardio-metabolic disease, obesity, and diabetes. Muller, Khoo, and Lambert (2013) highlighted the increase in overweight and obese populations in Asia, uncovering how high they have become and how they continue to rise. Unfortunately this an ever-growing issue in the Middle East and in order to reduce further risk of obesity and diabetes, a baseline for a minimum amount of PA needs to be established.

It's important that parents, educators and students understand that some sedentary behaviours, such as SSR need to be reduced and addressed. However, the use of technology is unavoidable and should be used to the schools advantage where

possible. Such as, dynamic use of Ipads during assessments. Schools need to implement the use of technology in moderation and encourage its use alongside a healthy, physical lifestyle. Strategies at home need to be adopted, so that screen time is limited, and families receive encouragement to participate in PA. During the school day, schools must introduce the possibility of reducing long periods of sitting, whilst incorporating regular PA.

Increasing PA and decreasing sedentary behaviours among students requires the Dubai Health Authority (DHA) to provide accessible places close to home and school where students can be active before and after school. The Middle East has already made progress and has increased the number of paths and parks available for public use over the last decade. Schools can also increase its offering of extra-curricular activities, well-prepared PE lessons, the opportunity to join sports teams for all levels, and the chance to play with equipment for longer periods of time during snack and lunch breaks. The link between parental support and PA, and the reduction in sedentary behaviour amongst students was recognised. It is recommended that families should try to incorporate activities, such as walking, cycling, swimming and jogging into their daily routines.

Reflecting on the process in which I have researched and the final report as a whole, it is evident that the reduction in a sedentary lifestyle and change in behaviours could assist in creating a lifelong active learner, and someone that will regularly participate in PA into their adult hood. This ideal is based on the research, my

experience and the experience of many of my friends and family. I hope that schools in the Middle East will continue to strive towards increasing PA, reducing sedentary behaviours and addressing those students believed to partake in a sedentary lifestyle.

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## Appendix

### Appendix one

# The Adolescent Sedentary Activity Questionnaire (ASAQ)

Thank you for helping us today. Many students are helping us by completing this questionnaire. By answering these questions you will help us understand more about the health of young people like yourself.

Your answers are confidential and will be looked at by the survey team and no-one else. No-one at your school will see your answers.  
Take your time to read each question in turn and answer it as best you can.

Thanks again for being part of this important survey!

### HOW TO COMPLETE THIS FORM

Most questions can be answered by placing a tick in a box or writing your answer in a box.

- ❖ Read each question carefully
- ❖ Write your answers clearly in the box
- ❖ Fully erase any mistakes
- ❖ Do not make any stray marks on this form
- ❖ Ask one of the staff if you need help

Name \_\_\_\_\_

Year \_\_\_\_\_

School \_\_\_\_\_

© Louise L Hardy<sup>1</sup>, Michael L Booth<sup>2</sup>, Anthony D Okely<sup>3</sup>

<sup>1</sup> NSW Centre for Overweight and Obesity, School of Public Health, University of Sydney, NSW

**Appendix two**

ACAORN

**The Adolescent  
Sedentary Activity  
Questionnaire  
(ASAQ)**

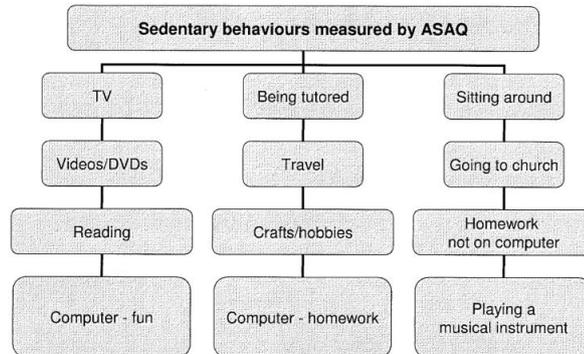
ACAORN

**Assessing sedentary  
behaviours using the  
Adolescent Sedentary Activity  
Questionnaire (ASAQ)**



Australasian Child & Adolescent  
Obesity Research Network

## Key adolescent sedentary behaviours



Australasian Child & Adolescent  
Obesity Research Network

## Other things to consider...

- ✓ Place
  - Where does the sedentary activity occur?
  - In what environment?
- ✓ Social context
  - Who is the sedentary activity usually done with?
  - Individually, with friends?
- ✓ Purpose
  - What is the reason for participation? Relaxation, educational, social, cultural, travel?

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Obesity Research Network

## Key dimensions of a sedentary activity self-report instrument

### ✓ Type

- TV
- Computer (work/fun)
- Reading
- Travelling
- Playing musical instrument
- Going to church/Saturday school
- Videos/DVDs
- Homework general
- Being tutored
- Crafts/hobbies
- Sitting around

## Key dimensions of a sedentary activity self-report instrument

### ✓ Frequency

- How often each week is spent on these activities?

### ✓ Duration

- How long do you participate in this activity?  
(best for adolescents to report in minutes)

## How does ASAQ measure up?

Instrument	Reliability (ICC)	Validity (value & measure)	Dimensions measured	Sensitivity to change	Burden	Cost to researcher
(Hardy, Booth, Okely, 2007)	0.57-0.86	Good face validity	Type Frequency Duration	High	30 mins to complete High level of prompting & instruction	Low printing, High entering & cleaning

## Strengths of ASAQ

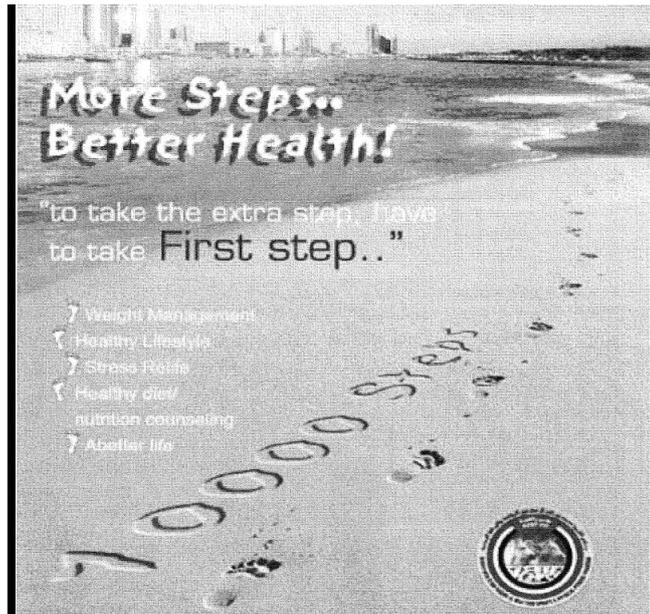
- Major sedentary activities are captured
- Every day of the week is recorded
- Frequency, Time (duration), and Type

## Outcome measures from ASAQ

- Time spent in sedentary activity stratified by dimension
- Proportion meeting small screen recreation recommendations (< 2 hours per day in small screen recreation)
- Categories of sedentary activity:
  1. Small screen entertainment (TV, videos/DVDs, computer for fun)
  2. Educational (homework with/without computer, being tutored, Saturday school)
  3. Travel (sitting in a vehicle)
  4. Cultural (reading, doing crafts or hobbies, playing instrument)
  5. Social (sitting around chatting with friends, going to church).

### Appendix three





## Project 1000 steps a day

The Project has adopted an exiting Sports Title aimed at promoting physical activity(1000 steps walk). the project is considered to be a special service offered by the department of sports affair, dubai Police inspired and supported by the strategic program of sheikh mohamed bin rashid al maktoum bin rashid al maktoum for sports 7 fitness. the project used the Pedometers as a tool to promote participation of physical Activities and to encourage active lifestyle, active workplace and active community, and it is the first of its kind in UAE.



## Why Be Active?

### Setting the Scene:

#### The Burden of Physical Inactivity in UAE:

- \* Many deaths per year are attributable to physical inactivity.
- \* Physical inactivity costs the health system millions of Dirhams annually.
- \* Physical inactivity is the second most modifiable risk factor that contributes to disease, morbidity and mortality in UAE.

#### Physical Activity levels in UAE:

- \* 65% of males and 74% of females are not sufficiently active for health benefits.

#### Obesity Levels in UAE:

- \* 52% of UAE women and 67% of UAE men are overweight or obese.

4

## Benefits of Physical Activity

- \* boosts energy levels and improves mood.
- \* reduces risk of chronic diseases.
- \* reduces stress and tension.
- \* improves balance and flexibility.
- \* improves sleep.
- \* assists in weight management.
- \* increases muscle and bone mass.
- \* increases circulation.
- \* increases the ability of people with certain chronic, disabling conditions to perform activities of daily living



5

## Why 10,000 Steps A Day?

The '10,000 steps' goal puts a focus on the accumulation of activity across the whole day. With continual advances in technology and our workplaces becoming more sedentary it now takes a concerted effort to make active choices. Some ideas are:

- \* Walk and talk with a colleague instead of emailing.
- \* Parking the car further away from the entrance to shops.
- \* Walk to the corner store for milk and the paper.

It is sometimes easier to make these choices when you have a motivational tool such as a pedometer reminding you how many, or how little steps you have done for the day.



6

10,000 steps is the recommended daily step goal for a healthy adult. The following pedometer indices have been developed to provide a guideline on how many steps are enough<sup>1</sup>.



Steps Per Day	Activity Level
<5,000	sedentary
5,000 - 7,499	low active
7,500 - 9,999	somewhat active
>10,000	active
>12,500	highly active

7

With this in mind, there are some groups where 10,000 steps may not be an accurate goal such as the elderly and children. This is where using a pedometer to see how many steps you currently do, and then setting higher goals to increase physical activity may be beneficial. A recent study also found that more steps are achieved if people are recommended 10,000 steps a day compared to the recommendation of a 30 minute walk. This is why we recommend 10,000 steps a day as well as supporting the need for individuals to aim for the National Physical Activity Guidelines to achieve health benefits.



8

## Getting Started

Sometimes it is taking the first step that is the hardest when you are starting a physical activity program or routine. Our website will provide you with some information on choosing the right activities, setting goals and also some tips on working towards an active lifestyle. Always remember that having a healthy, active lifestyle can be easy and cheap.

10,000 Steps is a free program that encourages you to use a step-counting pedometer to track your daily activity levels. Because the number of steps you take each day varies, your 10,000 Steps pedometer can provide you with motivation to make active choices throughout your day. where you can keep track of your daily activity, but first - use your pedometer to work out your baseline steps.

### Your Baseline Steps

Your baseline steps are the number of steps that you are currently doing before you begin your program. You can use your baseline steps to set goals as you aim to build more activity into your daily life.

9