

## **Physical activity and the school environment**

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### ***Introduction***

Contemporary thinking with respect to children and sun exposure recognises that sun protection is not solely necessary on the beach, but applies to all outdoor settings. Indeed sunburn often occurs in contexts where people do not realise the need for sun protection, and the school environment is one such site (Collins et al, 2006). Schools are effective settings in which sun protection initiatives can be incorporated through policy (“no hat no play”) and environmental supports (shade structures, hats, availability of sunscreen). This is best executed alongside multi-component education aimed at appropriate levels. However, the evidence suggests that any sun safety measures should not reduce pupil participation in physical activity. Regular physical activity reduces morbidity and mortality for multiple chronic diseases. Therefore, promoting lifelong physical activity in schools is a vitally important public health and educational priority. This paper explores the role of sun protection during outdoor physical activities in UK schools.

### ***Childhood and Adolescent UV exposure***

Exposure to UV radiation during childhood and adolescence plays a role in the future development of both melanoma and basal cell carcinoma (Whiteman DC et. al., 2001; Westerdahl et. al., 1994; Elwood et. al. 1997; Krickler et. al, 1994; Gallagher et. Al. 1995; Gallagher et. al, 1995). For example, the risk of developing melanoma is related strongly to a history of one or more sunburns (an indicator of intense UV exposure) in childhood or adolescence (Westerdahl et. al. 2001; Elwood JM, 1997; Armstrong BK, 1997; Whiteman D, 1994). Similarly, sunburns during this period have been demonstrated to increase the risk for basal cell carcinoma (Krocker A; 1997; Gallagher RP, 1995).

Childhood is the most important risk period for developing moles, which is a putative risk factor for skin cancer. Sun exposure in childhood might increase the risk of melanoma by increasing the number of moles (Armstrong BK, 1997). Sun protection during childhood has been shown to reduce the risk for melanoma in adulthood (Autier et. al, 1998).

Children and adolescents have more opportunities and time than adults to be exposed to sunlight (Buller et al, 1995; Foltz AT, 1993; Hurwitz, 1998) and thus accumulate more risk for developing skin cancer (Armstrong BK, 1997; Whiteman D, 1994; Gilchrest BA, 1999). Indeed, more than one half of a person’s lifetime UV exposure occurs during childhood and adolescence (Stern RS, 1986; Williams et. al. 1994).

### ***The importance of physical Exercise***

There is increased evidence that links obesity with numerous long-term and immediate health risks. Childhood and adolescent obesity can persist into adulthood, where the direct health risks of obesity are severe and well established. It has been estimated that up to 50% of obese adolescents remain

obese in adulthood (Boreham C et al, 2001.) Furthermore, other studies have linked childhood and adolescent overweight/obesity directly to middle-age mortality and morbidity (Boreham C et al, 2001; Twisk J, 2001; Kohl, H et al, 2000).

Evidence of a direct relationship between activity and health among children is generally weak. However, small but beneficial associations have been demonstrated. The childhood health benefits include reduced overweight and obesity, psychological well being, increased social interaction, improved self-esteem, skeletal health and growth, and education in other health-related risk factors. There is also some weak to moderate evidence that patterns of childhood physical activity influence adult activity, with an active child more likely to become an active adult (Riddoch, C, 1998; Boreham C, 2001; Harro M, 2000) Stronger associations between childhood and adult physical activity are found when the quality (rather than simply the quantity) of the childhood physical activity experience is taken into account. There is also evidence to suggest that by the time young people leave secondary school, their attitudes to, and their level of perceived ability in sport and exercise, are highly predictive of whether they are physically active as adults (The Health Education Authority, 1992).

Importantly, positive school physical activity policies and school attendance have been significantly linked. (Ferreira I, Van der Horst K, Wendel-VosWet al. , 2006). The previous government responded to the increase in obesity/overweight by publishing a Public Service Agreement (PSA) to '*Reduce the proportion of overweight and obese children to 2000 levels by 2020 in the context of tackling obesity across the population*'. The Chief Medical Officer (CMO) of England has recommended that children and young people should achieve a total of at least 60 minutes of at least moderate intensity physical activity each day. He also recommended that at least twice a week this should include activities to improve bone health, muscle strength and flexibility.

### ***Sun protection policies for schools***

Sun protection school-based guidance was first drafted in the UK in 1995. This guidance pack was produced by the Health Education Authority (HEA)/ Department of Health/ British Association of Dermatologists and was entitled '*Sun Awareness and Protection Guidelines for schools*'.

SunSmart UK issued current guidance for schools in 2007. Three information packs are currently available on their website, and are tailor made for the three main educational age groups:

- Pre-school;
- Primary school; and
- Secondary school.

This guidance provides information on:

- an explanation of why sun protection is important and how policy can help;
- ideas on how to devise a sun protection policy;

- guidance on monitoring and evaluating the policy;
- suggestions for points to be included in the policy;
- an example school policy;
- an example letter home to parents.

There is currently no statutory requirement that schools adopt a sun protection policy. Indeed, recent research undertaken by the University of West Of England has found a need for government policy to ensure consistent sun-awareness and protection strategies in schools (University of the West of England, 2009).

*'Actions of schools were seen as somewhat erratic, with some schools maintaining consistent policies, others selling hats to children and then making sure the hats were worn, while other schools appear from the parent's comments, to take no action'.*

Furthermore, a recent survey of all primary and secondary schools in the South West found the adoption of school sun protection policies varied widely. Forty one percent of those responding had either a dedicated sun protection policy or section on sun protection in their general health and safety policy, 24% were developing a policy, and 35% had no policy and no plans to develop one (Bowtell et al, 2010).

### ***Rescheduling school activities***

A main component of sun protection in schools widely recommended is the rescheduling of outdoor activities to avoid peak UVR times. With SunSmart recommending 11am to 3pm, whilst The World Health Organisation suggesting 10am to 2pm. The implications of executing this policy are serious. Indeed, following this guidance would effectively make outdoor activities off-limits for almost all the school day (typically 9am to 3pm). In light of this, a more practical approach might be to encourage a gradual shift in timetabled outdoor activities wherever possible. Where activities cannot be moved then there could be a movement towards executing appropriate policies and practices to encourage sun safe behaviour. These include the use of protective clothing, sunscreen, and shade, and are discussed later.

### ***Environmental protection within the school setting***

Boldemann et. Al. (2006)<sup>1</sup> measured the physical activity and UV exposure levels of children in different types of playgrounds in 11 schools in Sweden and found that those schools that had playgrounds with trees, shrubbery had significantly higher activity levels and significantly less UV radiation exposure. These were measured by step counts and dosimetry readings calculating fractions of available UV radiation. The factors influencing UV exposure were the location of playgrounds in relation to shade from buildings and vegetation and the times of day that these areas are in the sun. In addition children were attracted to playground equipment, and delimited areas did not stimulate dynamic play.

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<sup>1</sup> Please note this article was included in the evidence review presented by CRD for the phase 2 work.

This research suggests that the careful design of playgrounds in schools could address both UV exposure as well as physical activity levels in this population. However, further research is recommended in older age groups.

There is currently no clear guidance on sun protection for shade planning, auditing, or building for school environments. Indeed, evidence from the South West Public Health observatory indicate that this is currently reflected in current practice. The survey found that only eight per cent of primary schools surveyed had undertaken a formal shade assessment . In addition nearly two thirds were not content with the current shade provision within their school(Bowtell, N et al, 2010).

### ***Protective clothing***

Schools can develop policies that encourage or require pupils to wear protective clothing, hats, and sunglasses to prevent excessive sun exposure. These measures could be employed during physical education classes, break times, field trips, and sports days. Some schools, especially in Australia have a “no hat/no play” policy stating that students cannot play outdoors if they are not wearing a hat (Queensland Cancer Fund, 1997). A survey in the South West found 17% of schools responding enforced a hat wearing policy (Bowtell, 2010).

In the absence of a “no hat no play” policy, sun protection interventions in the primary school setting has been shown to have a positive effect on the wearing of hats (Dobbinson et. Al. 2000; Giles-Corti et al. 2004; Jones et. Al. 2008). Written information only approaches appear less successful (GHiles-Corti et al. 2004). However success has been shown to increase when ongoing technical support is provided in the form of toolkits and a helpline (Emmons et. Al 2008).

### ***Sunscreen application and schools***

School policies on sunscreen appear to differ widely across the UK following their interpretation of Local Education Authorities' guidance on this issue. These can range from requiring parents to send sunscreen in with their child, having a school supply of sunscreen, , asking children to apply sunscreen prior to attending school but prohibiting it's use within the school environment.

A survey undertaken by the South West Public Health Observatory in January 2009 found that of those responding, most schools (65%) do not provide sunscreen, but encourage pupils to bring their own. A small proportion (6%) provide sunscreen free of charge. Fifteen percent neither provide sunscreen nor encourage their pupils to bring their own sunscreen (Bowtell et al, 2010)

It will therefore be important the guidance given to schools on sunscreen application is drawn up so the application of sunscreen can be made more easily in the school environment.

## **Conclusions**

This paper has brought together important evidence that suggests the continued pursuit of outdoor physical activity within our school environment is vital to children's future health and wellbeing. We have therefore explored the evidence around keeping children safe from the sun in this context. Most of the school day occurs during peak UVR times. It is therefore deemed important that policy, guidance, and practice is implemented across schools to assist in the development of sun safe practices. This should focus on shade planning, protective clothing and the application of sunscreen.

## **Declaration of Interest**

The South West Public Health Observatory (SWPHO) is the lead cancer registry for skin cancer. Work undertaken on skin cancer has been both epidemiological and intelligence based, and does not directly provide skin cancer prevention services. If recommendations were made for epidemiological research coming out of this NICE guidance, and they were to be implemented, the SWPHO may bid and be awarded funding to undertake future epidemiological studies.

With funding from the Cancer Action Team the Skin Cancer Hub, which is a portal for prevention and early diagnosis of skin cancer by SWPHO, was launched in May 2008. In addition, the SWPHO have received funding from Cancer Research UK for an evaluation of their SunSmart Schools Competition. This will be undertaken in 2010.

Dr Julia Verne helped chaired the Cancer Guidance Development Group for skin cancer in 2006 and recently chaired the NICE Guidance Development Group review on guidance for the management of low-risk basal cell carcinomas in the community.

The evidence presented in this paper brings together research conducted by members of SWPHO team, Peninsular Cancer Network and Plymouth University funded by the Cancer Action Team.

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