

COVID-19 AND CHILDREN'S PLAY

Summary: This note has been prepared at the request of the Play Safety Forum¹ including, notably, Play England, Play Scotland, Play Wales and PlayBoard Northern Ireland. The purpose is to summarise emerging evidence on the effects of play restrictions in terms of a) reducing the risk of COVID-19 transmission in the population and b) the detriments to children resulting from the restrictions.

It is concluded that the current UK interventions need to be urgently reviewed because:

- the benefits to children of playing outside bring a host of social, emotional and physical rewards. These have long been undervalued and at this time appear to have been completely ignored. Consequently, children are suffering harm;
- the evidence is that the risks posed by COVID-19 to children playing in outdoor spaces is very low;
- proportionate decision making requires that trade-offs between the risks and benefits of safety interventions are part of the decision process. The evidence summarised below is that current UK policy is much more harmful to children than beneficial.

Introduction

In the early stages of the COVID-19 crisis (February-June 2020) children have been hard hit with stay-at-home orders and the closure of schools, childcare, playgrounds and some other outdoor spaces, and loss of opportunities for learning and socialising.² The purpose of this note is to provide factual information in so far as there are known facts to help decision makers responsible for play provision. This paper has been written partly to counter myths and misinformation but also to support more rational, evidence-informed decision making.

What is the Risk to Children Posed by COVID-19?

COVID-19 is unusual for an infectious disease in that the risks to the young are very small

Figure 1 shows the case fatality rate (CFR) for 10-year age categories for four countries.³ The CFR is calculated by dividing the number of confirmed deaths from COVID-19 by the number of diagnosed cases. There is considerable uncertainty around these data because the number of diagnosed cases is likely to be far less than the true number of infected cases. Nonetheless, as a group, children themselves can be seen to be at much lower risk than other ages. This is informative because it shows where controls and resources are most needed. The data show that COVID-19 is unusual for an infectious disease in that the risk to the young appears to be much lower than for other age groups.

¹ For a full list of members please see: <https://playsafetyforum.wordpress.com/>

² See 'Play First: Supporting Children's Social and Emotional Wellbeing after lockdown'. <https://www.outdoorplaycanada.ca/2020/05/13/play-first-supporting-childrens-social-and-emotional-wellbeing-during-and-after-lockdown/>

³ Max Roser, Hannah Ritchie, Esteban Ortiz-Ospina and Joe Hasell (2020) "Coronavirus Pandemic (COVID-19)". Published online at *OurWorldInData.org*. Retrieved (11 June 2020) from:

'<https://ourworldindata.org/coronavirus>' [Online Resource] <https://ourworldindata.org/mortality-risk-covid>. 'Our World in Data' are collaborative efforts between researchers at the University of Oxford, who are the scientific editors of the website content; and the non-profit organisation Global Change Data Lab.

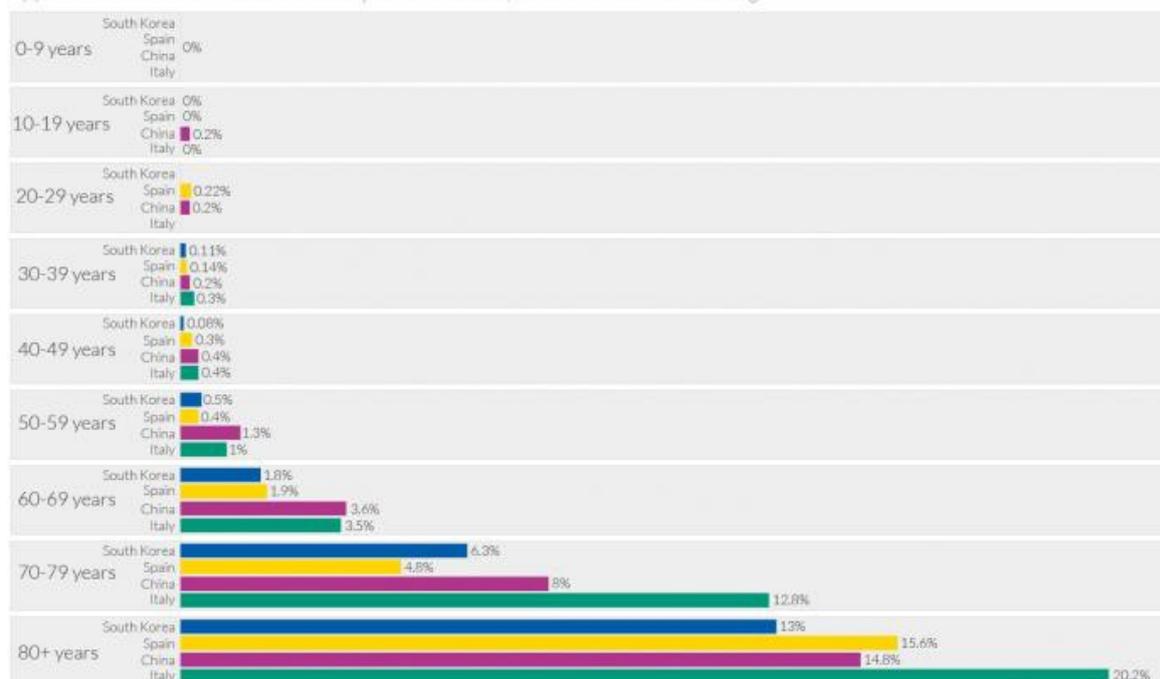
Coronavirus: case fatality rates by age

Case fatality rate (CFR) is calculated by dividing the total number of confirmed deaths due to COVID-19 by the number of confirmed cases.

Two of the main limitations to keep in mind when interpreting the CFR:

(1) many cases within the population are unconfirmed due to a lack of testing.

(2) some individuals who are infected will eventually die from the disease, but are still alive at time of recording.



Note: Case fatality rates are based on confirmed cases and deaths from COVID-19 as of: 17th February (China); 24th March (Spain); 24th March (South Korea); 17th March (Italy).

Data sources: Chinese Center for Disease Control and Prevention (CDC); Spanish Ministry of Health; Korea Centers for Disease Control and Prevention (KCDC).

Order G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. JAMA.

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Figure 1: Case fatality rates by age for four countries

Table 1 shows risk data for England and Wales by age group as posted by Professor David Spiegelhalter⁴ on 10 June 2020, based on data from the Office of National Statistics (ONS). The data report the crude death rate rather than the CFR, that is, the number of deaths in each age range divided by the number of persons in that age range *whether infected or not*. It can be seen that in the 9-week period to 28 May there were five recorded COVID-related deaths in children up to 14 years in a child population of approximately 10 million.⁵ The average risk (0-14 years) of a child dying from COVID-19 works out at 1 in 2 million. Risks of this order, whatever the cause, are generally regarded as very small.

Further confirmation is provided by a letter in 'Public Health' (21 May) which compares the mortality risk to children from COVID-19 in countries with a high burden of adult COVID-19 death with other known risks to children. Data from seven countries (the UK, USA, France, Germany, Italy, Spain and South Korea) show that over the 3-month period February – May 2020, more than twice as many children died from influenza than from COVID-19. Overall, there were around 13,200 deaths from all

⁴ Chair of Winton Centre for Risk and Evidence Communication, Cambridge University.

⁵ For ages 1-14 years inclusive the total number of deaths (all causes) in England and Wales in 2018 was 959, and 1,074 in the UK.

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/deathregistrationssummarytablesenglandandwalesdeathsbyingleyearofagetables>

E+W Registrations: 9 weeks, 28 March to 29 May

Age	COVID deaths	Population	COVID rate per 100,000	COVID rate as %	COVID rate as 1 in ..	5-year average	COVID as % of 5-year average	Equivalent days of normal risk
0-4	3	3,515,430	0.1	0%	1 in 1,171,810	503	1%	0
5-14	2	7,159,102	0	0%	1 in 3,579,551	94	2%	1
15-24	32	6,988,755	0.5	0%	1 in 218,399	352	9%	6
25-44	450	15,459,158	2.9	0%	1 in 34,354	2,176	21%	13
45-64	4,359	15,162,118	28.7	0.03%	1 in 3,478	10,641	41%	26
65-74	6,662	5,906,928	112.8	0.11%	1 in 887	14,735	45%	28
75-90	23,679	4,395,359	538.7	0.54%	1 in 186	41,180	58%	36
90+	9,682	528,959	1830.4	1.83%	1 in 55	18,523	52%	33
All	44,869	59,115,809	75.9	0.08%	1 in 1,318	88,204	51%	32

Average Covid risk has been around 50% extra than normal risk for over 45s, much less for under 45s

Table 1: Data posted on Twitter by Professor David Spiegelhalter (10 June 2020)⁶

causes in the seven countries, including over 1,000 from unintentional injury, compared to 44 COVID 19 fatalities.⁷

What is the Risk from COVID in the Outdoors?

The risk of COVID infection is much lower outdoors than indoors

The scientific consensus is that risk of transmission of COVID 19 is much lower outdoors than indoors. This is primarily because of the natural ventilation provided by air currents which disperse viruses very quickly, diluting them to low concentrations. It is also possible to maintain social distancing more easily outdoors. The relative importance of these two mechanisms is currently uncertain and most likely depends on circumstances. As Professor Keith Neal, Emeritus Professor in the Epidemiology of Infectious Diseases at the University of Nottingham, has said:

“Talking and coughing can produce droplets and aerosols. Droplets, which are larger than aerosols, carry more virus but fall rapidly to the ground under gravity. Aerosols are smaller and can drift further but also dry out quickly because they lose water content as they have a high surface area to volume unlike droplets. They are also rapidly dispersed with air movements and we rarely have no air movements outside. Sunlight includes ultraviolet radiation. This damages DNA and RNA. I have not seen any work on how quickly this affects COVID-19 but viruses left on surfaces outside will dry out and be damaged by UV light in sunlight. I totally agree that outside is very much safer than inside – you can be further apart and conditions outside are less conducive to virus survival than inside. I have been a strong advocate of allowing more outside leisure as it improves physical and mental health.”⁸

⁶ https://twitter.com/d_spiegel/status/1270673435874791425

⁷ <https://www.sciencedirect.com/science/article/pii/S0033350620302092?via%3Dihub>. Note: The authors caution that there is an outstanding multisystem hyper-inflammatory state in children which could be connected with COVID-19 and which needs further investigation.

⁸ <https://www.sciencemediacentre.org/expert-comment-on-risk-of-transmission-while-outside-and-vitamin-d/>

This position has been echoed by many other experts.⁹ For example, Dr Muge Cevik, virologist at the University of St Andrews, has said:

“While the infectious inoculum required for infection is unknown, these studies indicate that close and prolonged contact is required for COVID-19 transmission. The risk is highest in enclosed environments, household, long-term care facilities and public transport.

High infection rates seen in household, friend & family gatherings, transport suggest that closed contacts in congregation is likely the key driver of productive transmission. Casual, short interactions are not the main driver of the epidemic though keep social distancing!”¹⁰

Also, according to Professor Neal, “In one Chinese study of nearly 1,300 transmission events, only one occurred outside and they broke social distancing rules.”¹¹

What is the Risk from COVID-19 via Surface Transmission?

Definitive answers are currently unavailable. The evidence is that COVID-19 may survive for up to several days indoors. In contrast, recent research reports that exposure to sunlight in the outdoors rapidly inactivates the virus. Survival of the virus on a surface does not necessarily mean it is able to infect as readily as when airborne.

Should parks and playgrounds be reopened, there is the question of COVID transmission by contact with contaminated surfaces and whether this is a viable route of infection for children. According to a UK government website¹² the survival rate of respiratory viruses depends on the following factors:

- what surface the virus is on
- whether it is exposed to sunlight
- differences in temperature and humidity
- exposure to cleaning products.

It is said that under most circumstances, the amount of infectious virus on any contaminated surfaces is likely to have decreased significantly by 24 hours, and more so by 48 hours.

One study of the persistence of virus DNA in a London hospital ward found that it could persist and spread for several days.¹³ However, this was indoors and presence of the virus on a surface does not determine how likely it is that a person would be infected. An American study came to the same conclusion about persistence on surfaces.¹⁴

Other experiments also show how germs can spread on surfaces, but the microbe still has to survive long enough and in a large enough dose to make you sick. Professor Chudnovsky at the City University of New York notes that surfaces are not a particularly effective means of viral transmission. With the flu, for instance, it takes millions of copies of the influenza virus to infect a person through surface-to-hand-to-nose contact, but it may take only a few thousand copies to infect a person when the flu virus

⁹ <https://inews.co.uk/news/coronavirus-catch-outside-indoors-why-get-covid-19-explained-426628>

¹⁰ <https://threadreaderapp.com/thread/1257392347010215947.html>

¹¹ The source of this appears to be the Chinese study which can be found at <https://www.medrxiv.org/content/10.1101/2020.04.04.20053058v1> . Although the study at the time of publishing had not been peer-reviewed the finding that outdoor infection is rare is likely robust.

¹² <https://publichealthmatters.blog.gov.uk/2020/01/23/wuhan-novel-coronavirus-what-you-need-to-know/>
(updated 11 June 2020)

¹³ <https://www.sciencedaily.com/releases/2020/06/200608092951.htm>

¹⁴ <https://www.nejm.org/doi/full/10.1056/NEJMc2004973>

goes from the air directly into the lungs. He says that a similar pattern is likely to be true for the new coronavirus, but the exact numbers are not known.¹⁵

The above research applies to indoor environments. In contrast, a paper in the Journal of Infectious Diseases (May 2020) provides evidence that sunlight typical of the outdoors rapidly inactivates COVID-19:

“Previous studies have demonstrated that SARS-CoV-2 [the virus that causes Covid-19] is stable on surfaces for extended periods under indoor conditions. In the present study, simulated sunlight rapidly inactivated SARS-CoV-2 suspended in either simulated saliva or culture media and dried on stainless steel coupons. Ninety percent of infectious virus was inactivated every 6.8 minutes in simulated saliva and every 14.3 minutes in culture media when exposed to simulated sunlight representative of the summer solstice at 40°N latitude at sea level on a clear day. Significant inactivation also occurred, albeit at a slower rate, under lower simulated sunlight levels. The present study provides the first evidence that sunlight may rapidly inactivate SARS-CoV-2 on surfaces, suggesting that persistence, and subsequently exposure risk, may vary significantly between indoor and outdoor environments. Additionally, these data indicate that natural sunlight may be effective as a disinfectant for contaminated nonporous materials.”¹⁶

What is the Risk to Adults Posed by Children?

Current evidence is that adults are more likely to be infected by other adults than by children.

It is appropriate to ask, if children are allowed out, might they pick up the virus and later infect adults? According to the Royal College of Paediatrics and Child Health:

“the importance of children in transmitting the virus is difficult to establish, in particular given the number of asymptomatic cases, but there is some evidence that their role in transmitting the virus is fairly limited. Precise details regarding paediatric transmission cannot be confirmed without widespread sero surveillance, but trends are emerging. Studies of multiple family clusters have revealed children were unlikely to be the index case, in Guangzhou, China and internationally. A SARS-CoV-2 positive child in a cluster in the French Alps did not transmit the virus to anyone else, despite exposure to more than 100 people.”^{17, 18}

The overall pattern emerging from the evidence suggests that children may have a more limited role in spreading the virus to others. As has been stated by Dr Alasdair Munro about the possibility of child to adult transmission:

“That is certainly possible. The most important point here is that this appears to be less likely than an adult catching it from another adult and doing the same. Children have wrongly been singled out. We should be more concerned with adults.”¹⁹

¹⁵ <https://www.independent.co.uk/news/uk/home-news/coronavirus-surface-contact-spread-risk-covid-19-a9538746.html>

¹⁶ <https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa274/5841129>

¹⁷ https://www.rcpch.ac.uk/resources/covid-19-research-evidence-summaries#footnote25_fa8lsp5

¹⁸ The French study can be found at <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa424/5819060>

¹⁹ <https://twitter.com/apsmunro/status/1270020972339396609>

What are the Risks to Children Posed by Lockdown?

Experts in child development and child psychiatry agree that children are experiencing multiple harms as a consequence of play deprivation.

An editorial in *BMJ Paediatrics* includes the following statement:

“One of the unique characteristics of the COVID-19 pandemic is the low hospitalisation and mortality rate (<0.2% for teenagers). However, children are experiencing additional harm due to social isolation, lack of protective school placements, increased anxiety and a drop-in service provision from both the National Health Service (NHS), education and social services. This is particularly true for the most vulnerable children.”²⁰

Collateral damage is also identified by professors from Sussex, Cambridge and Reading Universities who are experts in children’s mental health and development. Published on May 13 2020, ‘Play First: Supporting Children’s Social and Emotional Wellbeing During and After Lockdown,’¹ urges that children’s social and emotional wellbeing be prioritised in all decisions relating to the easing of lockdown and re-opening of schools.

This public document was prompted by concerns that since lockdown children were being deprived of play opportunities through social isolation, with known implications for short- and long-term mental health, especially for those from marginalised and disadvantaged groups. The authors state that poor emotional health in childhood is linked to long-term mental and physical health difficulties, and poor academic and occupational functioning. Further that it is the number one predictor of adult life satisfaction. Mental health problems during childhood also place a significant economic burden on society.

Reference is made in ‘Play First’ to The United Nations Convention on the Rights of the Child, Article 31, which defines play as a fundamental right. Play has substantial benefits for children’s holistic development and emotional wellbeing. Outdoor play is linked to increased physical health as well as social and emotional health. Play is beneficial during times of anxiety, stress, and adversity: it provides a sense of control and independence; it helps children make sense of things they find hard to understand; it supports their coping and resilience. In highly stressful situations (e.g. war zones, in hospital, in orphanages) research shows that playing with other children is therapeutic.

Helen Dodd, Professor of Child Psychology, reports on a review conducted by a team at Cambridge University’s PEDAL research centre,²¹ which examines the impact of quarantine and restricted environments on children’s play. Professor Dodd comments as follows:

“The review raises what I think is a crucial point; as a result of lockdown many children will be playing at least as frequently as usual, but their access to the full range of play opportunities is restricted. For social and emotional wellbeing, children need opportunity for all types of play, including play with their peers and physical outdoor play, both of which have been and, to some extent, continue to be restricted. This restriction is likely to be felt particularly acutely by children without siblings who are close in age and by children who don’t have easy access to outdoor

²⁰ <https://bmjpaedsopen.bmj.com/content/4/1/e000701>

²¹ Graber, K., Byrne, E. M., Goodacre, E. J., Kirby, N., Kulkarni, K., O’Farrelly, C., & Ramchandani, P. G. <https://psyarxiv.com/p6gxt>

space. This further contributes to concerns about lockdown exacerbating existing social inequalities (Morrison N, 2020)."^{22,23}

On June 14 an open letter to Gavin Williamson, Secretary of State for Education, and signed by Professor Ellen Townsend and over a hundred leading academics concerned with the psychological wellbeing of children was published in *The Sunday Times*.²⁴ The letter refers to the neglect of children and adolescents in government policy during the UK lockdown.

"As experts working across disciplines we are united as we urge you to reconsider your decision and to release children and young people from lockdown. Allow them to play together and continue their education by returning to preschool, school, college and university, and enjoy extra-curricular activities including sport and music as normally, and as soon, as possible. Undoubtedly, you already know the arguments that support this direction in decision making but we articulate some of them here nonetheless."

"The lockdown exacerbates key risk factors known to increase the risk of self-harmful thoughts and feelings including defeat, entrapment, loneliness/social isolation, hopelessness and anger. Mental health problems also contribute to self-destructive thoughts and behaviours and sadly, a national survey in 2017 indicated that these were increasing, particularly among teenagers. Since lockdown, we are seeing increases of these issues in young people through surveys at the University of Oxford, the Mental Health Foundation, and rapid reviews (e.g. from the University of Reading) indicate these trends are likely to persist. Suicide is already the leading cause of death in 5-19 year olds in England and the second leading cause of death in young people globally; thankfully, COVID-19 will never claim this many young lives."

Unintended Consequences of the 'War' against COVID-19

There has been a failure to properly assess the risks of collateral damage to children and adolescents

As Professor David Seedhouse has written in relation to the COVID-19 pandemic in general:

"Reflection on risk is pertinent. Partly because of our many psychological biases, there can seem either to be only one risk to worry about or it can seem that this risk is obviously most important. What is not considered in any depth is the fact that whenever you prevent a risk – no matter how significant you think that risk is – you create other risks. Until this is fully understood balance is hampered."²⁵

This is not a novel thought and, for example, the 'Principles of Risk Management'²⁶ published by the European Institute for Science, Media and Democracy in December 2019 make the same point, as have many others before,²⁷ but it is seemingly one that needs repeating.

The question raised here is whether the blanket closure of outdoor playing fields and playgrounds was the right step to have taken. It will no doubt be argued that at the time and given the uncertainties it

²² <https://www.nationalelfservice.net/education/wellbeing/play-pandemic/>

²³ Morrison, N. (2020). [Lockdown will only widen the gap between rich and poor students](#). *Forbes website*, last accessed 6 June 2020.

²⁴ <https://www.bbc.co.uk/news/health-53037702>

²⁵ D. F. Seedhouse, 'The case for democracy in the COVID-19 pandemic,' Sage Swift in press.

²⁶ <https://www.eismd.eu/wp-content/uploads/2020/02/Capur-Statement-of-Principles.pdf>

²⁷ E.g. John Graham and Jonathan Wiener (1995) 'Risk versus risk: tradeoffs in protecting health and the environment,' Harvard University Press.

was an appropriate precautionary measure. However, in dealing with complex societal hazards such as that posed by COVID-19 there is a need for a correct form of decision making, one which incorporates the views and knowledge of all pillars of society, if the best outcome is to be achieved. Risk governance is a term sometimes applied and refers to a decision-making process which involves government, economic interests, civil society and experts.²⁸

In contrast the UK's approach has involved primarily the government and SAGE experts, the experts themselves being drawn from a relatively narrow group of disciplines and not to our knowledge including any expertise on children's wellbeing.²⁹ It has been argued, we understand, that allowing children to continue to play outside might influence adult behaviour, making them less careful, but this too is a manifestation of a rather narrow, behaviouralist ideology which tends to see people as unreliable and needing of coercion or 'nudging'³⁰ rather than the alternative of boosting people's ability to think and decide for themselves.

And another important question is, what is the most beneficial outcome for society? To quote Seedhouse again:

"In the case of the pandemic the particular group we are trying to benefit is almost entirely the vulnerable elderly, but it need not be. We could instead focus on the well-being of young people and ensure that their needs are most supported, even above the needs of the elderly. It is not an objective truth that we must do everything possible at any cost to protect older people – it is a value judgement and we need to be open and honest about this.

And we might then also ask: ultimately, which goal is more important: the most beneficial outcome for a group of people or the most beneficial outcome for society as a whole? This is not merely of academic interest. These choices affect us all."²⁵

This is not to say that the elderly and those with comorbidities should be sacrificed for the young. It is to say that COVID-19 control measures should recognise the age-specific nature of the risk along with the tradeoffs and be formulated accordingly. The recognition of trade-offs itself implies that the correct form of risk assessment to apply is one which accommodates consideration of both the upsides and downsides of controls, for example, some form of risk benefit assessment of the type advocated for use in children's play settings.^{31, 32}

Conclusions

During the present crisis measures have been applied which severely restrict the freedom of children and adolescents. Little consideration appears to have been given to children's welfare outside of the impact on education. Play, as has often been the case, has been forgotten or side-lined, yet there is copious scientific evidence of its importance for development.³³ In contrast, there is little evidence

²⁸ Professor Ortwin Renn on risk governance: <https://www.youtube.com/watch?v=lnPbpiZ0DLw>

²⁹ *The Sunday Times* letter (14 June) also notes the relative shortage of expert and scientific input on SAGE specifically covering young people's mental health and education, referring to it as "an important and dangerous omission."

³⁰ https://en.wikipedia.org/wiki/Nudge_theory

³¹ <http://www.playengland.org.uk/wp-content/uploads/2015/10/psf-risk-benefit-assessment-form-worked-example.pdf>

³² <https://www.hse.gov.uk/entertainment/childrens-play-july-2012.pdf>

³³ Kenneth Ginsburg, 'The importance of play in promoting healthy child development and maintaining strong parent-child bonds,' *Pediatrics* Vol. 119, issue 1, 2007, pp. 182-191; <http://www.playengland.org.uk/resource/play-for-a-change-play-policy-and-practice-a-review-of->

that permitting children to play outside will increase risk in any significant way providing common sense measures are maintained.

As has been said:

“Eliminating risk isn’t possible. Life isn’t like that. But even if it were possible, eliminating risk would be a mistake, because the costs of doing this would be too high....”³⁴

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Written for the Play Safety Forum by Professor David Ball, Tim Gill and Andy Yates

Biographies

David Ball is Professor of Risk Management and co-Director of the Centre for Decision Analysis & Risk Management (DARM) at Middlesex University. He has had a long-standing interest in matters of public life including children’s play and has contributed many books and papers on these topics.

Tim Gill is a global advocate for children’s outdoor play and mobility, and author of *No Fear: Growing up in a risk-averse society and Urban Playground: How child-friendly planning and design can save cities* (due 2021). Tim is a visiting research fellow at Reading University, a Churchill Fellow, and a former director of the Children’s Play Council (now Play England).

Andy Yates has been active in the children’s play sector for over 35 years, specialising in the judgements required to balance the benefits of play against the inherent risks posed by their activities. Andy is Technical Director of HAGS, being a leading supplier of children’s play and other recreational products. Andy is also currently the Chairman of the British and European Standards committees, for Children’s Playground Equipment.

[contemporary-perspectives/](#) . See also links to documents on the benefits of play by the four nations: <https://www.playwales.org.uk/eng/playhealth> ; <https://www.playscotland.org/play/play-for-health/the-power-of-play/> ; <https://www.playboard.org/wp-content/uploads/2020/05/Play-And-Resilience-Fact-Sheet.pdf> ; <https://www.playengland.org.uk/about-us/why-play-is-important/>

³⁴ A. Buchanan, ‘Better than human – the promise and perils of enhancing ourselves,’ Oxford University Press 2011.