

# The impact of the covid-19 pandemic on the physical activity and health and well-being of children and adolescents in Europe

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## ABSTRACT

In what ways and to what extent has the Covid-19 pandemic affected the lives of children and young people in Europe by limiting their access to physical education and other types of physical activity, including sport? A review of the available, reported, evidence-based knowledge is provided with regards to physical activity and motor behaviour; psycho-social well-being; as well as effects on mental well-being. From a literature review, the main insights are extracted and placed in a wider policy context, including as regards EU-wide priorities regarding sports policy, health-enhancing physical activity (HEPA) as well as public funding, including from the EU budget.

## KEYWORDS

covid-19 (coronavirus) pandemic; confinement; youth; physical inactivity; sport; mental health; psycho-social problem; sport policy; health-enhancing physical activity (HEPA)

## DOI

10.14712/23366052.2022.1

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This author is an EU official, yet opinions expressed are strictly personal and do not render any official positions of the European Union.

## INTRODUCTION

Since March 2020 the COVID-19 pandemic has been affecting sport and education systems across Europe. The pandemic has sparked a considerable amount of scholarship across Europe (e.g. Mittag & Naul, 2021; Naul, 2021; Kovacs et al., 2021) and other parts of the world (Biswas & Banerjee, 2020; Sriwijitalai, 2020). Debates on the effects caused by the pandemic on sport have taken place in wider fora (e.g. Grix et al., 2021; Pedersen et al., 2020), including such aspects as tax breaks accorded to professional sports (Ličen, 2020) at a time when amateur and community sports were struggling even harder, and with more limited financial reserves, while PE in schools have been hit particularly hard (O'Brien et al., 2020). But while there is every reason to ask what the future of global sports governance will look like (e.g., Sugden & Sugden, 2020), issues closer to home may be more pressing, such as the ability of European children and young people to cope with the drastic drop in physical education and school sport via school closure and lockdowns for any offer of physical activity in sport clubs.

While relying heavily on a literature review as its main methodological feature, our paper retains a strong and constant focus on the effects of observed reductions in physical activity and sport, it is not solely concerned with the causality. Besides asking how much is known about the physical activity/physical education rollback in COVID-19 times, its causes, stages and outcomes up until now, its especial – and original – contribution lies in attributing findings to three main categories of physical activity and motor behaviour; psycho-social well-being; as well as effects on mental well-being. As such, beyond the literature review, the contribution is also (and especially) a conceptual one.

To make this contribution, our paper aims to provide a review of some European COVID-19 studies with the objective of comparing these ongoing threats for physical activity and physical education with related impacts on health development in school-aged children and adolescents. Our discussion will be grounded in three domains of health: the physical-motor domain, the psychosocial domain, and the cognitive-mental domain. The central items of study are in how far a former active lifestyle before the pandemic changed into a more sedentary lifestyle within pandemic time or after the first wave of COVID-19 (April to June 2020) and to what extent sedentary items of development became even stronger within or after the second wave of COVID-19 (October 2020 up to February 2021)? It will be analysed to what extent the pandemic has reversed efforts to improve young people's participation in sport and physical activity and decreased the status of their physical fitness, motor performance and social well-being as opposed to merely reinforcing equally observable trends in their diminution. How can COVID-19 evolutions in motor behaviour, psychosocial and mental health and wellbeing compare with each other, and which policy priorities can be deduced from these findings? To what extent can it be said that, at the beginning of the pandemic, consistent and measurable policies were on track, with which we can compare the ensuing rollback, and which (sport) policy implications might be deduced from the findings?

## CHILDREN'S AND ADOLESCENTS' INVOLVEMENT IN PHYSICAL EDUCATION, PHYSICAL ACTIVITY AND SPORT DURING THE COVID-19 PANDEMIC

### 1. Physical activity and motor behaviour

The German Child and Youth Sport Report is a recurrent publication. The editors of the Fourth Report (Breuer et al., 2020) touched briefly upon the (possible) implications of the Corona pandemic, including by referring to one German (Mutz & Gerke, 2020), two European (Pietrobelli et al., 2020; Zenic et al., 2020) as well as one American study. Regarding the likely effects of the pandemic on children and young people, they point to a retarded development of sport-discipline-specific competences proper to entire cohorts, a regressive practice of sport and physical activity and increased social inequality in access to these (Breuer et al., 2020, p. 9). "Overall, physical inactivity observed pre-pandemic in children and young people in Germany is likely to have increased, at least for the time being, while the motoric and health-related effects remain to be assessed" (ibid., p. 10).

The Fourth Report thus misses an opportunity to engage in an argument regarding cohort-specific inactivity effects of the pandemic while, definitely, the editors' concerns regarding increased social inequality and the risk of further inequality deserve attention. Even without access to reliable empirical data, this scenario remains within the remit of reasonable expectations, given that schools and sport clubs have been closed for more than a year, since many children and young people who would habitually profit from physical education and extra-curricular sport activities offered at sport clubs are unlikely to have been physically socialised in schools and sport clubs. Extended closures of schools and sport clubs have led to a drastic increase in physical inactivity, while home-schooling practices have led to a marked rise in sedentary screen time. Some regional reports regarding the wider lifestyle effects of the pandemic further document unhealthy lifestyles, including in diets, as some studies reveal.

An early study conducted by Mutz & Gerke (2020) consisted in an online self-reporting survey ( $n = 1001$ ) of young people and adults in Germany (age 14–64). During the early weeks of the first lockdown (March–April, 2020), respondents were asked to identify their motor behaviour before as well as 2–3 weeks into the pandemic, at a time when all schools and sport clubs had been shut down rigorously. For constructing a "leisure time sport & exercise" profile (LTSE), four sample groups were analysed, representing respondents without any LTSE engagement as well as those with a reduced, retained or even enhanced engagement. The non-engaged profile increased from 36% (pre-pandemic) to 59.9%, while 31% of respondents reduced their LTSE behaviour variously. The group reporting 2 h LTSE per week dropped from 10.3% to 6.7% and thence to 3.6%. Retained LTSE levels were reported by 27% and increased LTSE by 6% of respondents, the latter chiefly through outdoor activities (running, cycling) as well as indoor workouts. On balance, already during its first weeks, the pandemic provoked a significant LTSE diminution, although less so among the younger respondents (age 14–29) as compared with older ones.

A comprehensive study of children (age 4–10) ( $N = 514$ ) and young people (age 11–17) ( $N = 750$ ) was conducted on the basis of the third wave of the MoMo (*Motorik Modell*) study of the Karlsruhe Institute of Technology (KIT) Wunsch et al., 2021) with a view to establishing causal links between motoric activity, screen time

and ‘Health Related Quality of Life’ (HRQoL) scores. Based on pre-pandemic scores (2018), the study aimed at making predictions regarding indicators during the pandemic (April–May 2020). Among four initial hypotheses, only one could be validated: ‘The exploratory analysis revealed a positive effect of HRQoL pre-Covid-19 on PA within-Covid-19, especially in younger children and in females’ (Wunsch et al., 2021, p. 9). While vindicating previous studies affirming links between HRQoL and continued sports practice, the study also triggered surprising insights regarding the level of pre-pandemic physical activity in both sample groups, during the early weeks of the first 2020 lockdown, at a time when all schools and all sports clubs were closed without exception. In the 4–10 age group, as to meeting the target of 60 min daily physical activity on weekdays, boys reported an increase from 4.74 to 5.39 and girls even from 4.62 to 5.27 days! Similarly, the 11–17 age group reported a surge from 3.90 to 4.08 in boys and from 3.55 to 3.96 in girls. According to these data, daily motoric activity is supposed to have improved during the pandemic, with no access to school sport or sport clubs. Whereas these results are frankly astounding and at variance with the findings of most other studies (see below), we should remain vigilant as to the hypothesis of a generalised physical activity increase during the pandemic. While physical activity at home, in gardens and backyards may have shown a slight increase, it is doubtful if such activity can compensate for the weekly loss of 2–3 hours of PE (90 to 135 minutes) at school, of two extracurricular sports activities and of up to 2–4 hours (90 to 180 minutes) of additional club sport. By aggregating figures from various sources, we may postulate a significant net reduction in time dedicated to physical activity, which is unlikely to have been compensated by activity of “habitual physical activity” like playing outside, doing gardening etc. with a lower cardiovascular intensity compared with physical exercise. Where Wunsch et al. (2021) come closer to other studies, is when reporting minimum daily screen time in both age groups, especially in the child sample (age 4–10), where figures almost doubled in boys (from 76.65 to 143.73 min per day), against a less steep increase in girls (from 74.61 to 124.86 min). While the young people (11–17) reported a less dramatic growth, their pre-pandemic values had been considerably higher, albeit more so in boys (from 233.10 to 299.42 min a day) than in girls (from 186.13 to 250.25 min).

Another study published by Schmidt et al. (2021) assessed the outcome of lockdown for organised sport activities, compared to participation rates in self-organised sport activities and changes for “habitual physical activities” (HPA) like playing outside, gardening, housework and with the inclusion of changes in children’s and adolescent’s screen time. This study is one of the very rare longitudinal studies up today (up to 85% of identical sample of  $n = 1,322$  boys and girls between 4 and 17 years old), which compared the status of physical activities at three different measurement times: before Corona (t1), during the first wave of COVID-19 (t2, April–May, 2020) and during the second wave of Covid-19 (t3, November 2020–February 2021).

The timeload for organised sports declined from 28.5 min per day (t1) via zero minutes in the first lockdown wave (t2) where all schools and sport clubs were locked and 3.7 minutes during the second lock down (t3). Self-organised sport activities were measured with 6.6 min per day (t1) via 24.3 min in the first wave (t2) and 9.9 min in the second wave (t3). Compared to the organised sport activities,

self-organised sport activities did increase between t1 and t2 (in spring time), but decreased in t3 (due to winter time). Nevertheless, a small higher amount of daily minutes for self-organised sport still existed within the second wave (t3) compared to pre-Corona time (t1). However, if both types of sport activities are accumulated, there is an important decrease between t1 (35.1 minutes per day), down to t2 (24.3 min per day) and even more down at t3 (13.6 min) which means in total a reduction by more than 60% compared to pre-Corona times. The same decline was measured for HPA between 59.1 min a day at t1 compared to only 22.4 minutes at t3, also more than 60% down.

On the other side, data of measured screen time in minutes per day did increase extremely from 133.3 min in pre-Corona times more than 60 minutes in the first wave (t2, 194.5 min) and an another extended increase in the second wave (t3, 227.5 min) which means a total increase in Corona time by approx. 95 minutes.

We have no reason to assume that children and young people in Germany would be significantly better off than their European peers, given that children and young people's participation in sports and physical activity more generally tends to match social household indicators, including parents' socio-educational and socio-economic status, and their sport affinity (Niessner et al., 2020). Access to sport and physical activity tends to reproduce inequalities already present in society, though the exact patterns applicable to the new 'Corona Generation' of 2020 and 2021 remain to be assessed.

Insights gained from the above-mentioned German studies are complemented and expanded by drawing on studies from other European countries covering children and young people's experience of confinement. Orgiles et al. (2020), for instance, reported the results of a survey of 1,143 parents in 94 Italian and 87 Spanish cities as to the effects of the pandemic on their children (age 3–18). The trend in motoric behaviour was regressive across all degrees of intensity. The group practising 30 min a day shrank from 13.6% pre-pandemic towards a mere 5.6%, while the group practising 60–90 min a day diminished from 28% to 9.3%. The group with less than 30% screen time (understood broadly as 'media time'), plummeted from 22.1% to 3.4%, while the size of those with 120–180 min daily increased from 5.5% to around 30%. Approximately 86% of parent respondents deplored that 76% of their children lacked social contacts, while 52% suffered from boredom, 31% from loneliness and 30% from anxiety. These findings are, by and large, confirmed by a smaller study from Verona (Italy), based on examinations of 41 overweight children as regards their behavioural profile before (May–June 2019) and during (March–April 2020) the pandemic (Pietrobelli et al., 2020). Reported sports time dropped from 3.60 to 1.29 h a week, while screen time rose from 2.76 to 7.61 h a week and the consumption of crisps and fizzy drinks rose to levels representing twice their pre-pandemic levels. (For another Spanish-Italian study, see Universidad Miguel Hernández & Università degli Studi di Perugia, 2020). Possible consequences from the combined trends in physical activity, screen time and diets can be deduced from the annual student monitoring conducted in Slovenian schools. Based on data collected in 100 schools (age 7–15), Starc (2020) reported that (in June 2020), compared with the corresponding age cohort of the previous year (2019), 69.5% of girls and 67.8% deplored a loss of physical fitness, while 56.8% of girls and 58.4% had put on weight. In standardised physical fitness tests, the 2020 cohort

achieved significantly lower scores than the 2019 cohort had obtained one year earlier, especially among boys and girls aged 7–9.

A very large and first comparative study between countries in Europe was conducted by Kovacs et al. (2021). They included 8,395 students between 6 and 18 years (mean age 13 years, 47% boys, 57.6% urban, 15.5% of the sample stayed in self-isolation of COVID-19). The sample included countries with high COVID cases (Russia, Spain, Italy, Germany, France) and lower COVID cases (Flanders, Portugal, Romania, Hungary, Poland, Slovenia). Data collection was done in the first Corona wave (May, June 2020). Items of measurement were: structured schedule of physical activity daily, percentage of students who meet the 60 min norm of daily physical activity, and percentage of students who meet the norm of screen time of 2 h or less a day.

The final outcome of the study was that 66.4% of the sample group remained in structured routines (min 38.4% Russia, max 69.3% Germany) during the first corona wave. Important and significant differences occurred for online teaching in physical education. In total 56.6% of the students received online PE in the first wave of Corona (min 2.1% Germany, max. 79.8% Slovenia). The norm of 60 min physical activity a day was achieved by 19% of the total sample, again significant differences of achievement were measured cross-culturally (min 7.5% Italy, max. 26.7% Slovenia), and an excess of more than 2 hrs screen time on daily level was measured for 69.5% of all students, whereas the screen norm was only achieved by 30.5% (min 20.4% Italy, max. 53.8% Germany).

The authors of the study concluded that there existed a “prevalence of insufficient physical activity and unhealthy screen time” (Kovacs et al., 2021, p. 1) during the Corona wave and “consistent daily routines are important in helping children maintain healthy active lifestyle in pandemic situation” (ibid.).

## **2. Effects on psycho-social wellbeing**

The significant impact of Covid-19 pandemic on young people’s social life and psycho-social well-being is also reflected in various studies. While regular physical activity behaviour changed perceptibly as a result of the pandemic, serious adverse effects have also been reported regarding the psycho-somatic behaviour of children and young people. Based on a study of the effects of the first wave of the pandemic, COPSYPY (Corona-Psychology) (COPSYPY I), Ravens-Sieberer et al. (2021) reported from a follow-up study conducted six months later, drawing on data from the second wave (COPSYPY II). This in turn allowed for longitudinal comparisons to be drawn between the psycho-somatic behavioural profile of children and young people pre-pandemic (t1), during the first wave (t2) as well as during the second wave (t3) (Ravens-Sieberer et al., 2021). The study distinguished two age groups, representing children (age 7–10) (t2 n = 546; t3 n = 503) and young people (age 11–17) (t2 n = 1,040; t3 n = 1,077), with an average age of 12.25 years (t2) and 12.75 years (t3) respectively. Using various measurement instruments (KIDscreen, SDQ, HRQoL questionnaire, etc.), the sample remained 85% stable from t2 to t3, suggesting that a veritable longitudinal cut can be made. A striking finding is a noticeable increase in low ‘health-related quality of life’ (HRQoL) scores, ranging from 15.3% pre-pandemic over 40.2% during the first to as much as 47.7% during the second wave. Concomitantly, high HRQoL waned from 16.6% pre-pandemic over 5.8% during the first towards 5.7% during the second wave, pointing to perfectly reciprocal developments: low HRQoL scores have tripled

while high HQRoL values have shrunk towards one third of their initial level. Reported stomach aches (from 21.3% over 30.5% to 36.4%) and headaches (from 28.3% over 40.5% to 46.4%) match this trend closely, as do complaints of anxiety, depressions and general psycho-somatic unease in children and young people. The psychosocial dimension of health have been picked up in the reports of some umbrella organisations. OECD (2020) research showed that social distancing, restrictions and quarantine measures resulting from the Covid-19 pandemic caused stress, anxiety, isolation (an issue addressed early on by German Research Foundations et al., 2020) and loneliness among the youth across Europe.

The OECD (2020) study also found that young adults (aged 18–29) have experienced higher levels of distress compared to other age groups since the onset of the pandemic. Extant socio-economic inequalities seem to have been exacerbated, especially when lockdown measures forced schools to deliver all classes in a remote, virtual format, when one early Dutch study found that most pupils had made little or no progress while studying at home (Engzell, Frey & Verhagen, 2020). Long-term effects are hard to guess, though one psychological study published in *The Lancet* concluded by surmising that ‘psychological impact of quarantine is wide-ranging, substantial and can be long lasting,’ even if this ‘is not to suggest that quarantine should not be used’ (Brooks et al., 2020). It simply means that we know very little about the likely long-term effects, especially outside the somatic ambit. Early on, a combination of the pandemic and the protective measures adopted to contain it were taking their toll on people’s somatic and mental health and well-being (Peters et al., 2020) and it will take quite some time before the full implications are known.

The Covid-19 outbreak magnified pre-existing social inequalities in resources, resulting in an unequal impact on youth from different social strata. The vulnerable and at-risk young people such as marginalised, migrant, homeless and LGBTI+ youth have been affected by the pandemic significantly more than the general population of young people. The studies have identified an additional gender divide in terms of women and girls being impacted more by Covid-19 pandemic compared to men and boys (EU-Council of Europe youth partnership, 2020). Existing inequalities are widening because of the disproportionate impact of the Covid-19 pandemic on young people from disadvantaged groups that are already in a precarious situation, i.e. outside the education, training and labour market. They are the ones who can easily be overlooked if governments do not pay specific attention, as they tend to be already in a situation without even their minimum requirements being met on health, education, employment and well-being (Eurofound, 2021).

Social inclusion and youth mental health therefore need to be addressed through comprehensive and sustainable measures that could diminish the negative impact of the pandemic on young people. The response to Covid-19 must be shaped in a way that protects the human rights of all young people that form a key element in an inclusive recovery and the achievement of the Sustainable Development Goals (SDGs) (UNFPA, UNICEF 2020). To avoid exacerbating intergenerational inequalities and to involve young people in building societal resilience, governments need to anticipate the impact of mitigation and recovery measures across different age groups, by applying effective governance mechanisms and developing policies that reach vulnerable and marginalised youth, including migrants and refugees, youth living in rural areas,

adolescent girls and young women, indigenous and ethnic minority youth, young persons with disabilities, young people of different sexual orientations and gender identities and homeless youth (OECD, 2020a).

### **3. Effects on mental wellbeing**

Recent findings reveal a decline in mental wellbeing in the EU as a whole, and an overall increase in negative feelings, such as tension and feeling downhearted, especially among youth due to restrictions on their mobility and social interactions (Eurofound, 2021). Research shows that school closures during Corona waves have affected young people's mental well-being as teachers and classmates can provide social and emotional support. The Covid-19 pandemic furthermore posed a threat to young people's mental health by worsening existing problems and curtailing access to school-based mental health services (OECD, 2020). Another effect of the Covid-19 outbreak was reflected in the increased need for support, coupled with delays and unmet needs of students (32%), due to disrupted provisions of public services, such as essential healthcare and mental healthcare (Eurofound, 2021).

The overall impact of the Covid-19 pandemic on young people's social and economic rights negatively affected the mental health of nearly two-thirds of the youth population in Europe. The main factors affecting young people's mental health include high levels of uncertainty and unhappiness with changes in work, education or living circumstances. This is especially prominent among those who have lost their job. Almost two-thirds of people (64%) in the youngest age group (18–34 years) are at risk of depression, and their average mental wellbeing is worse compared to people aged 50 years or over. An increase in depressive feelings and lower levels of life satisfaction was recorded particularly among younger groups. Their relationships with parents also appear to be negatively affected (European Youth Forum, 2021), while parents too have been negatively affected as regards their mental wellbeing (Huebener et al., 2021). Young women's mental health and wellbeing was notably worse than young men's. Across age and gender groups, the lowest mental wellbeing in spring 2021 is registered among women aged 18–24 and women aged 35–44 though the largest drop in mental wellbeing occurred among men aged 18–24 (Eurofound, 2021).

Apart from statistics, the qualitative data confirmed that mental health and wellbeing was still a significant concern for young people, who described feeling lack of freedom, lack of inner peace, feeling out of control, and a general change of mentality as the pandemic progressed. A key issue affecting several young people was unhappiness with being forced to move back to the family home because of a decline in economic circumstances that was often linked with a loss of independence. This was particularly problematic for LGBTQIA+ youth (European Youth Forum, 2021).

The Covid-19 counter-measures affected young people more than the virus itself. As a result, young people became a new vulnerable group with possible long-term developmental, health and mental health consequences. Although the scale of the Covid-19 impact is not fully predictable, the three-way relationship between education, employment and mental health is crucial to emphasise. The research shows that work instability and educational uncertainty are key sources of stress and wellbeing issues for young people in Europe. These combined impacts may affect young people's lives well beyond the end of the Covid-19 pandemic, and they are likely to worsen



their employment and educational prospects in the future (European Youth Forum, 2020).

Therefore, studies on long-term impact are needed, as well as better insight into the (in) effectiveness of the proposed measures, particularly aiming to tackle the mental health and wellbeing of (vulnerable) young people in Europe. Research indicates that there is no substantial Europe-wide pandemic response, but rather limited responses from national policymakers on young people's mental health. Some examples that are identifiable are not targeted at young people, and in many cases are only partially relevant to them. For instance, while national mental health phone helplines are offered to provide support to citizens dealing with isolation and the mental health problems in Cyprus and Portugal, additional mental health support for frontline caregivers is offered in Belgium and Ireland. Focus on strengthening mental health in remote medical services and campaigning against domestic violence was run in Iceland (European Youth Forum, 2021).

To reduce the long-term consequences for young people of the Covid-19 pandemic, it is essential that policymakers increase access to mental health and wellbeing support for young people. The policy measures need to go beyond an approach to mental health and wellbeing focused solely on medical intervention, and include support aimed at addressing the socio-economic determinants of mental health and underlying stress factors. This should be delivered through a range of settings such as schools, non-formal education providers, youth organisations and online (European Youth Forum, 2021).

## DISCUSSION

Returning to the research questions formulated at the outset of the present papers, developments driven by the 2020–2021 Covid-19 (Coronavirus) pandemic appear to have led to a considerable decrease in the physical activity and physical education of young people. A drop in motor behaviour (despite some isolated cases of higher reported individual scores regarding some types of physical activity) seems to have led to a deterioration of both psycho-social and mental health and well-being. Although more research is needed to establish the exact nature and amplitude of these evolutions, it seems safe to establish a general physical activity/physical education rollback which, in turn, would compare unfavourably with the developments up until 2021, as identified by Mittag & Naul (2021) against the benchmarks of the policy goals of the last 17 years. For recovery from the threats to physical activity, physical education and sport within the waves of COVID-19 pandemic, Mittag and Naul (2021) stated on COVID-19 in their commissioned sport policy review to the European Parliament:

“Many former European promotion initiatives of HEPA and grassroots sport participation were put on hold or even scaled down due to the pandemic, leaving youth at even greater risk of establishing inactive lifestyles, as well as social isolation and behavioural problems in family life. Therefore, a COVID-Recovery Fund (CRF) on school-based HEPA and local sport club-based physical activities is necessary to adopt and rebuild the foundations of healthy active lifestyles among young people in the post-COVID era” (Mittag & Naul, 2021, p. 85).

## POLICY IMPLICATIONS

In this context, a distinction needs to be made, between traditional (medals-led, hosting-focussed) sports policy and a health-enhancing physical activity (HEPA) policy aimed at ensuring access to sport and physical activity for all citizens (Kornbeck, 2020, 2021a, 2021b). Where a traditional sports policy approach would tend to earmark funding for specific legal entities, regardless of their activities, a HEPA approach would rather let the funding follow specific activities, distributing funds through open calls (Kornbeck, 2020, 2021b). In the European Union, where access to sport has become a relevant benchmark outside the formal sport and HEPA policy fields, applying it to such areas as competition and state aid law, a certain HEPA soft-law doctrine may now be recognised (Kornbeck, 2018) after the COVID threats, while the implementation of the 2013 Council HEPA Recommendation, as per the two implementation reports published by the European Commission (2016, 2019), leave some question marks as regards the impact of that policy (Kornbeck, 2021a). In February 2021, the European Parliament (2021) voted a Resolution identifying youth-relevant spending as a priority for the execution of credits provided under the Next Generation EU (Covid-19 recovery package) programme (Kornbeck, 2021b). It will be important to ensure that this actually happens, so as to avoid a repetition of a frequent preference for infrastructure projects over spending on (young) people.

## CONCLUSION

A collection of COVID-19 studies on children's and adolescent's physical activity, physical education and sport in the first two waves of Corona development documented reduced time allocation of PA, reduced development of fitness and motor skills compared to pre-Corona time in different EU-countries. A decline in former achievements of the daily PA norm (60 minutes) were reported with a parallel high increase of daily minutes of screen time. In some surveys this ambivalent trend was reported with weight gain, higher intake of density food and sweated beverages. As one of the most mentioned outcomes of changes to psychosocial health during Corona time, social isolation with reduced face to face communication for peers at school and within sport clubs and sleep problems were mentioned by parents for younger children.

Collected data of Covid-19 indicators for physical activity, social health and well-being became during the second COVID wave after Oct. 2020 even worse than in the first COVID wave with data collections in April–June 2020. Some first longitudinal developments between pre-COVID-19 time and within waves of COVID documents the continuous breakdown of an active lifestyle. Motor development, particularly in coordination and aerobic endurance capacity declined in COVID-19 waves. Significant psychological impact of social distancing and quarantine measures on young people causing stress, anxiety and loneliness.

School closures have negatively affected young people's mental well-being as teachers and classmates can provide social and emotional support.

Declines in mental health and wellbeing across Europe were reported with a very strong impact of the pandemic on the living conditions of mainstream youth, even

stronger for youth at risk; increased mental health symptoms and decreased psychological well-being among youth.

COVID-19 is more negatively impacting on women and girls' mental health and well-being than for boys and men and in general the pandemic tends to magnify pre-existing social inequalities in human resources.

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