

Physical Activity in the Face of the COVID-19 Pandemic: Changes in Physical Activity Prevalence in Germany

Körperliche Aktivität während der COVID-19-Pandemie: Veränderungen in der Prävalenz körperlicher Aktivität in Deutschland

Summary

- › **Problem:** Physical activity (PA) is a vital component for promoting physical and mental health and for preventing disease. The COVID-19 pandemic has challenged populations from around the world on various levels to maintain and increase overall PA and subsequently led to a shift in physical activity and its health outcomes. This paper synthesizes the current literature on PA during the COVID-19 pandemic in the German population.
- › **Methods:** In a rapid review we identified 31 studies that examined PA behavior in children, adolescents, young adults and adults from Germany during the COVID-19 pandemic.
- › **Results:** Findings indicate predominantly a decline in PA among all age groups. PA levels in children and adolescents increased in a few studies predominantly during the first lockdown. Types of sports and intensities changed within the German population during the pandemic. Quality assessment of the included studies revealed a lack of adequately reported PA measures as well as a lack of sufficiently reported study results.
- › **Conclusion:** The COVID-19 pandemic led to lower PA levels overall in the German population. Furthermore, the PA inequality has been exacerbated. With the uncertainty of the duration of the pandemic, the continuous and cross-agency efforts of PA promotion across all population groups is key.

Zusammenfassung

- › **Problem:** Körperliche Aktivität ist eine wichtige Komponente zur Förderung der körperlichen und geistigen Gesundheit und zur Prävention von Krankheiten. Die COVID-19-Pandemie und die damit einhergehenden Eindämmungsmaßnahmen führten zu entscheidenden Veränderungen im täglichen Leben der Bevölkerung und veränderten damit auch das Bewegungsverhalten. Diese Arbeit fasst die aktuelle Literatur über die Veränderung der körperlichen Aktivität während der COVID-19-Pandemie in der deutschen Bevölkerung zusammen.
- › **Methoden:** In einem Rapid Review wurden insgesamt 31 Studien identifiziert, die das körperliche Aktivitätsverhalten von Kindern, Jugendlichen, jungen Erwachsenen und Erwachsenen aus Deutschland während der COVID-19-Pandemie (März 2020–Juli 2021) untersuchten.
- › **Ergebnisse:** Die Ergebnisse deuten überwiegend auf einen Rückgang der körperlichen Aktivität in allen Altersgruppen hin. Allerdings zeigte sich auch während des ersten Lockdowns eine Zunahme des Aktivitätsverhalten insbesondere bei Kindern und Jugendlichen in einigen wenigen Studien an. Sportarten und Intensitäten versänderten sich innerhalb der deutschen Bevölkerung während der Pandemie. Die Qualitätsbewertung der eingeschlossenen Studien ergab einen Mangel an adäquat berichteter gemessener körperlicher Aktivität sowie unzureichende Berichterstattung der Studienergebnisse.
- › **Schlussfolgerung:** Die COVID-19 Pandemie hat zu einer Abnahme im Bewegungsverhalten in der deutschen Bevölkerung geführt. Angesichts der Ungewissheit über die Dauer der Pandemie sind anhaltende und behörden- und sektorenübergreifende Handlungen zur Förderung der körperlichen Aktivität in allen Bevölkerungsgruppen von entscheidender Bedeutung.

KEY WORDS:

Exercise, Sport, Lockdown, SARS-CoV-2

SCHLÜSSELWÖRTER:

Trainieren, Sport, Lockdown, SARS-CoV-2

Introduction

Regular physical activity (PA) is associated with numerous health benefits, including the prevention and control of physical, mental and social health issues: Strong evidence shows that, par example, regular PA lowers the risk for cardiovascular diseases, diabetes, as well as breast and colon cancer (18). Besides, it has been suggested that an active lifestyle across the lifespan lowers all-cause mortality risk, independent

of geographical location, socioeconomic status, and genetic predisposition (31). PA is further associated with improved mental health (49) and increased life expectancy (30).

However, in 2012 researchers called out the pandemic of physical inactivity (25), which is responsible for 5.3 million deaths per year worldwide (31) and is threatening the global economy. Despite multi- ➤

REVIEW

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Table 1

Inclusion and exclusion criteria for the rapid review.

	INCLUSION CRITERIA	EXCLUSION CRITERIA
Outcome	Investigation and quantitative analysis of changes (based on either prospective or retrospective designs) in physical activity (any type, domain or intensity; any measurement method) caused by the Covid19 pandemic	Study only focusses on physical activity behaviours during the pandemic without considering pre-pandemic behaviours (either prospective or retrospective) Studies focusing on sport club or fitness center membership rather than on physical activity behaviour
Population	Participants living in Germany were included. In case of international studies: data for the German participants are reported separately.	Only participants with chronic diseases were included Studies among competitive/ professional athletes In case of international studies: no separate data analyses/presentation of German participants is available.
Publication type	Empirical studies published in English or German language	Commentaries/ discussion papers not presenting original data Publication language other than German or English

Table 2

Study characteristics.

CHARACTERISTIC	INCLUDED STUDIES, N(%)	SOURCES
PARTICIPANTS		
Children and adolescents	8 (25.8%)	(20, 26, 29, 33, 46, 47, 48, 58)
Young adults	6 (19.4%)	(8, 16, 19, 22, 40, 42)
Adults	17 (54.8%)	(3, 5, 10, 12, 13, 27, 28, 32, 34, 35, 37, 38, 39, 45, 51, 53, 55)
STUDY DESIGN		
Longitudinal study	12 (38.7%)	(5, 10, 28, 29, 34, 37, 38, 39, 46, 47, 48, 58)
Cross-sectional study	19 (61.3%)	(3, 8, 12, 13, 16, 19, 20, 22, 26, 27, 32, 33, 35, 40, 42, 45, 51, 53, 54)
PA INDICATOR		
WHO Guideline	10 (32.3%)	(12, 13, 19, 32, 33, 34, 46, 47, 48, 58)
Types of Sports	4 (12.9%)	(16, 42, 51, 54)
Types of PA	12 (38.7%)	(10, 12, 13, 28, 37, 38, 39, 45, 46, 47, 48, 58)
General PA	10 (32.3%)	(3, 5, 8, 16, 19, 20, 27, 29, 33, 40)
Step counts	1 (3.2%)	(22)
Reduction of PA	1 (3.2%)	(26)
Duration and Quantity of PA	3 (9.7%)	(22, 35, 51)
Inactivity	2 (6.4%)	(29, 33)
PA intensity	2 (6.4%)	(42, 53)
MEASUREMENT METHOD		
Questionnaire	31 (100%)	(3, 5, 8, 10, 12, 13, 16, 19, 20, 22, 26, 27, 28, 29, 32, 33, 34, 35, 37, 38, 39, 40, 42, 45, 46, 47, 48, 51, 53, 54, 58)
Smartphones	1 (3.2%)	(22)
SAMPLE SIZE		
<500	12 (38.7%)	(3, 16, 19, 20, 28, 29, 35, 42, 45, 51, 53, 54)
500-999	4 (12.9%)	(12, 13, 32, 40)
1000+	15 (48.4%)	(5, 8, 10, 22, 26, 27, 33, 34, 37, 38, 39, 46, 47, 48, 58)
REGIONAL CONTEXT		
National representative	11 (35.5%)	(10, 26, 32, 37, 38, 39, 42, 46, 47, 48, 58)
National	8 (25.8%)	(8, 12, 13, 19, 27, 51, 53, 54)
Regional	12 (38.7%)	(3, 5, 8, 16, 20, 22, 28, 29, 33, 34, 35, 40, 45)

ple efforts to tackle the physical inactivity crisis on multiple levels for several decades, more than 27% of the world's adult population fails to comply with the recommended 150 minutes per week of physical activity in 2020 (6). Furthermore, worldwide 81% of adolescents aged 11-17 years were insufficiently physi-

cally active in 2016 (17). In Germany, the prevalence of physical inactivity is equally alarming: prior to the pandemic, less than every 10th child (7) and only 42.6% of women and 48.0% of men (11) are meeting the WHO Global Guidelines on Physical Activity (55) that postulate a minimum level of PA required to offer significant health benefits and mitigate health risks.

Since January 2020, the outbreak of COVID-19 was declared a public health emergency and in March 2020, the outbreak of the virus was characterized as a pandemic (56). Many governments' immediate protective measurements aimed to halt, or at least slow down, the spread of the COVID-19 disease, which brought full or partial lockdowns of cities, travel bans and closed borders, social restrictions etc. (23). This drastic change in public and personal life brought changes to the population's lifestyle behavior. On many levels, the world population's daily PA has been impaired for months, affecting the health of a significant portion of the global society. Understanding how the COVID-19 pandemic impacted PA and related non-communicable diseases (NCDs) is to be completely understood, but we now know that the inactivity pandemic is key in the global explosion of NCD's that have tragically collided with the COVID-19 pandemic (21). Therefore, fighting the silent pandemic of physical inactivity and its health consequences is arguably one of the most pressing global public health challenges of the current and post-COVID-19 era.

Thus, the objective of this rapid review is to set the scene for PA changes of the German population in face of the COVID-19 pandemic. This review synthesizes empirical studies conducted in Germany.

Methods

Study Design

This research includes a rapid review strategy based on the standardized procedure proposed by Seidler, Nußbaumer-Streit (50). A rapid review approach has been conducted as it is an appropriate way to address health-related questions that require rapid answers during the COVID-19 pandemic (50).

Eligibility Criteria

Studies were included in the current review if they met various inclusion criteria regarding outcome, population, and publication type and if exclusion criteria did not apply (table 1).

Search Strategy

The database search was performed on 19 May 2022 using the electronic databases Pubmed and Web of Science (with all the databases included in this platform). The search strategy was

based on the following search term: We used the filter for publication years (only 2020-2022) to refine the results. Additionally, we also screened all published articles of the journal collection of the German Journal of Exercise and Sport Research on “Physical activity, physical education, exercise and sport in times of the COVID-19 pandemic” that included 13 articles that were published in the bespoken journal from 01 January 2021 on <https://link.springer.com/collections/efjfcffgji>. Finally, we also conducted a hand search to identify all relevant articles.

Study Selection and Data Extraction

Identified references were imported into Endnote X9, a reference management software (1). All duplicates were removed. This step was followed by a three-step study selection process, comprising (1) title-screening, (2) abstract-screening, and (3) full-text-screening for inclusion criteria by one researcher (F.B.). During each step of the screening process, all references that could not conclusively be excluded were kept for further screening in the next step. Insecurities in relation to final inclusion were resolved through discussion with a second researcher (A.K.R.). The following data were extracted from each included article: study title (if available) author(s); year; age of sample; sample size; regional context; study design; time points of measurement; measurement method; PA measures (PA indicator and units/categories/sub-groups); prevalence of PA during the COVID-19 pandemic and changes in PA (decrease, no change, increase). All studies were also allocated to one of three ages categories (children and adolescents; young adults; adults).

Quality Assessment

We conducted a quality assessment following procedures as suggested by Brand, Nosrat (4) in their systematic review. This approach was based on criteria from the JBI checklist for analytical cross-sectional and prevalence studies (36), and the AXIS appraisal tool for cross-sectional studies (9). Included studies were rated along five categories about 1) aim of the study, 2) participants, 3) methods, 4) measures and 5) results. Each category was labelled with either “yes”, “some concerns” and “no”. To get a score for each individual study, we rated “Yes” with 2 points, “some concerns” with 1 point and “No” with 0 points. The maximum reachable sum score is 10 points.

Synthesis of Results

It was anticipated that the studies included in this rapid review would exhibit a diverse range of PA indicators and research methods, especially related to PA measures. Therefore, it was not appropriate to use meta-analysis to integrate and summarize the included studies. Instead, a narrative synthesis of results was performed. Findings of changes in PA prevalence were grouped based on age groups (children and adolescents, young adults and adults).

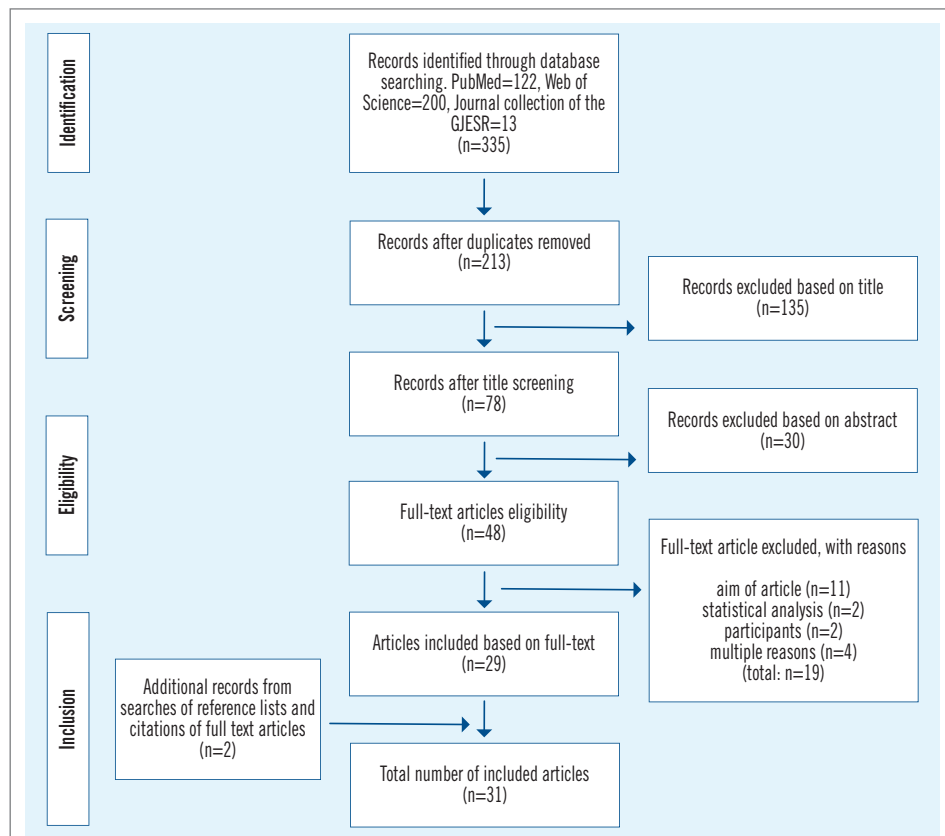


Figure 1

Flow chart summarising study selection and inclusion processes in this rapid review, including the reasons for exclusion of all full-text articles that were reviewed.

Results

A total of 335 potentially relevant articles were identified through database searches. After screening for titles and abstracts, full texts of 48 articles were retrieved for in-depth screening. 19 articles were excluded due to trivial aim of either the article, the statistical analysis, participants or other reasons, thus a total of 29 articles were identified as eligible and were included in this rapid review. Subsequently two additional publications were identified through hand search, yielding a total of 31 articles reporting on 23 unique studies included in this review (figure 1).

Characteristics of Included Studies

Overall, 23 projects, including 31 studies, were identified that investigated PA during the COVID-19 pandemic (March 2020-July 2021) in children and adolescents, young adults or adults from Germany (table 2) (table 3, 4, 5, see supplemental material online). Eight studies investigated PA changes in children and adolescents, six in young adults and thirteen in adults. PA indicators varied along the included studies, but the majority assessed WHO guideline compliance (N=10), types of PA (e.g., walking, gardening, outdoor play, unorganized PA) (N=12) or overall PA which was not described in greater detail (N=12).

Related to the study design, twelve studies assessed longitudinal data (5, 10, 28, 29, 34, 37, 38, 39, 46, 47, 48, 58) whereas the majority of identified studies (N=19) were cross-sectional in nature and 17 studies used retrospective data for reference. The remaining two studies (32, 53) compared the assessed data during the pandemic with existing data from similar studies (pre-pandemic). The sample size ranged from 106 (28) to 5,021 (8). In 11 studies, the sample was rep- ➤

Table 6

Quality assessment of the included studies (based on JBI Checklist for analytical cross sectional and prevalence studies (34)).

SOURCE	AIMS/OBJECTIVES OF THE STUDY CLEARLY STATED?	MEASURE OUTCOMES (PA) CLEARLY DEFINED?	STATISTICAL RESULTS ADEQUATELY DOCUMENTED?	METHODS ADEQUATELY DOCUMENTED?	SCORE (YES=2; SOME CONCERNS=1; NO=0)
Brailovskaia, Truskauskaite-Kuneviciene (3)	Yes	Some concern	Some concerns	Yes	8/10
Brandl, Zimmermann (5)	Yes	Some concerns	Some concerns	Some concerns	7/10
Busse, Buck (8)	Yes	Yes	Some concerns	Yes	8/10
Engels, Mutz (10)	Yes	Yes	Yes	Yes	9/10
Fuezeki, Schroeder (12)	Some concerns	Some concerns	Yes	Yes	6/10
Fuezeki, Schroeder (13)	Some concerns	Some concerns	Yes	Yes	7/10
Giessing, Kannen (16)	Yes	Yes	Some concerns	Yes	8/10
Helbach and Stahlmann (19)	Yes	Yes	Some concerns	Yes	9/10
Hommel, van Loon (20)	Yes	No	No	Some concerns	4/10
Huber, Steffen (22)	Some concerns	No	Some concerns	Some concerns	3/10
Koletzko, Holzapfel (26)	Some concerns	No	No	Some concerns	3/10
Koopmann, Mueller (27)	Some concerns	No	Some concerns	Some concerns	4/10
Krist, Dornquast (28)	Yes	Some concerns	Some concerns	Yes	8/10
Kurz, Braig (29)	Yes	No	Some concerns	Yes	7/10
Maertl, De Bock (32)	Yes	Yes	Some concerns	Yes	9/10
Marckhoff, Siebald (33)	Yes	Yes	Some concerns	Some concerns	8/10
Mata, Wenz (34)	Yes	Yes	Some concerns	Yes	9/10
Mojtahedzadeh, Neumann (35)	Yes	Some concerns	Some concerns	Yes	8/10
Mutz and Gerke (37)	Yes	Yes	Yes	Yes	9/10
Mutz, Müller (38)	Yes	Yes	Yes	Yes	10/10
Mutz and Reimers (39)	Yes	Some concerns	Yes	Yes	9/10
Palmer, Bscheiden (40)	Yes	Some concerns	Some concerns	Yes	7/10
Pietsch, Linder (42)	Yes	Some concerns	Yes	Yes	8/10
Schlichtiger, Steffen (45)	Some concerns	Yes	Yes	Some concerns	7/10
Schmidt, Anedda (46)	Yes	Yes	Yes	Yes	10/10
Schmidt, Burchartz (47)	No	Yes	Some concerns	Yes	5/10
Schmidt, Burchartz (48)	Yes	Yes	Yes	Yes	10/10
Sonza, da Cunha de Sá-Caputo (51)	Some concerns	No	Some concerns	Some concerns	5/10
Tschuschke and Schröder (53)	Yes	Some concerns	Some concerns	Some concerns	6/10
Wendtlandt and Wicker (54)	Yes	Yes	Some concerns	Yes	7/10
Wunsch, Nigg (58)	Yes	Yes	Some concerns	Yes	8/10

resented by a nationwide representative sample (10, 26, 32, 37, 38, 39, 42, 46, 47, 48, 58) whereas the remaining 20 studies took place either across Germany (N=8) (8, 12, 13, 19, 27, 51, 53, 54) or in a regional context within Germany (N=12) (3, 5, 8, 16, 20, 22, 28, 29, 33, 34, 35, 40, 45).

Evidence on Changes in PA Prevalence

Children and Adolescents

PA levels in children and adolescents increased during the first lockdown in Germany in the MoMo-Study (46, 48, 58) and less children and adolescent were classified as physically inactive (29). Other studies indicated for the same time period lower PA levels in children (20, 26), especially in older children and adolescents (26). The trend towards lower PA levels in older children and adolescents was equally identified in the subsequent MoMo-Study in which data was collected during the second lockdown in Germany (December 2020-May 2021) (47) (table 3, see supplemental material online).

Young adults

The change of compliance with the WHO guideline was as-

sessed in one study for young adults and indicated a small decrease (37.4% to 36.8%) (19). A change in the types of sports has been observed, which is associated with a change towards types of sports that can be done without others (e.g., jogging, gymnastic and strength training at home, unorganized sports) (16, 42). Regarding PA intensities, the amount of PA with low and moderate intensities increased in this age group during the first and second lockdown (8, 42) (table 4, see supplemental material online).

Adults

Percentage of adults meeting the WHO guideline decreased since the onset of the pandemic (12, 13, 34). However, Maertl, De Bock (32) indicated an increase from 29.4% to 32.1% of adults achieving the PA recommendations. Overall, PA as well as the amount of PA in some types (e.g. walking, active travel, gardening...) decreased (10, 12, 13, 27, 28, 37, 38, 39, 45). Similar to trends observed in young adults, PA with lower intensities increased or did not change while PA with higher intensities decreased during pandemic in adults (5, 53). There was also a change in the types of

sports (51, 54); aerobic training increased while strength training decreased (51) (table 5, see supplemental material online).

In addition to the quantitative changes in PA that occurred during the pandemic, one further aspect has been observed: there were changes regarding the way how people exercised during the pandemic. For example, Mutz, Muller (38) examined the use of digital media for home-based activities during the COVID-19 pandemic and found that 23% of adults in Germany having used digital media for sports activities at least once during the pandemic while public and private sports infrastructure were closed. A variety of digital exercise options were used, especially in younger, higher educated and financially better situated participants. People using digital tools to engage in exercise reported 30min/week more time in exercise activities during the pandemic compared to individuals who solely exercised without digital media.

Quality Assessment

The results of the standardized assessment of the methodological study quality using two standardized instruments is summarized and can be found in figure 2. The results of this evaluation show that 70.9% of the included studies (N=22 studies on PA behavior change) are lacking quality in two or more domains. Many studies had no clear description of the assessed PA (51.6%). In particular, it was not clear, what type or domain of PA (e.g. structured vs. unstructured) was investigated. Furthermore, studies lacked related to sufficient reported results by missing key statistical analysis such effect sizes, p-values or test-results. In 10/31 of the included studies statistical results were documented adequately and sufficiently. Overall, the sum score of the included studies reached a mean value of 7.1/10 points with the lowest quality in Huber, Steffen (22) and Koletzko, Holzapfel (26) with only 3 of 10 points. On the other hand, three studies had the highest possible sum score of 10 points (38, 46, 48) (table 6) (table 3, 4, 5, see supplemental material online).

Discussion

Since the onset of the COVID-19 pandemic, PA opportunities have been restricted for the majority of the population due to lockdown measures, including closures of sport grounds, sport clubs and schools, and the quarantine and social distancing measures implemented by many countries worldwide. Several reviews summarized the changes of PA from pre to during the lockdown in countries all over the world (4, 41, 52, 57). As restrictions to slow down the spread of the virus varied across the countries, it is challenging to compare the changes in PA levels (2). Thus, the aim of the present rapid review was to summarize the PA changes from pre to during the pandemic in the German population.

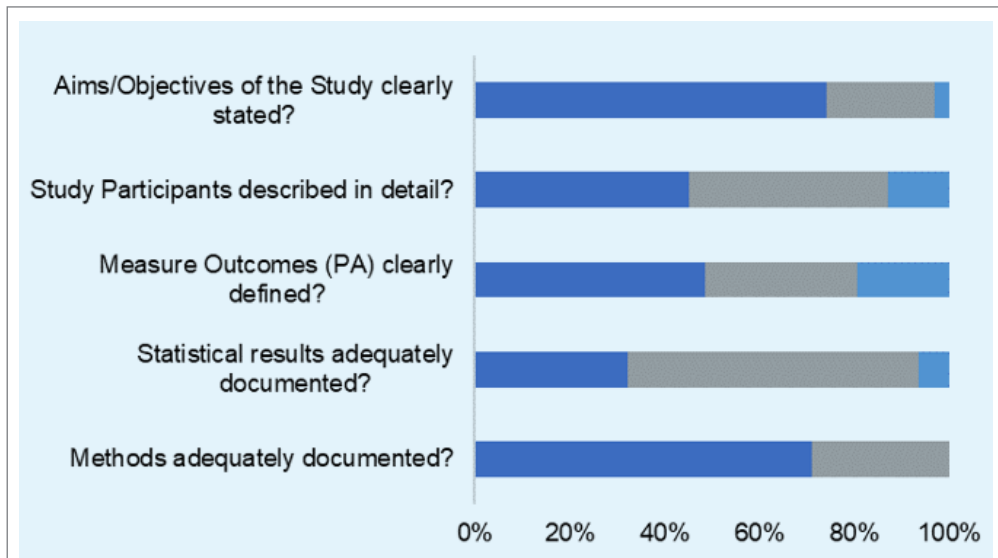


Figure 2

Standardized assessment of methodological quality. Dark blue=yes, grey=some concerns, light blue=no.

This rapid review identified 31 suitable studies. The majority of these studies reported that PA declined during the first and second COVID-19 pandemic lockdown, regardless of the target population or the methodology used. Nevertheless, half of the studies with children and adolescents revealed increases in PA levels during the first lockdown (29, 46, 48, 58). This could be explained by the closure of kindergartens and schools resulting in more recreational time to engage in unorganized PA (43). Additionally, the first lockdown took place during spring in Germany. Coming from winter, rising temperature levels invited many to be physically active outdoors (14, 15). On the other hand, decreases of PA in children and adolescents can be explained by the closure of sports clubs and thus restricting one important opportunity to engage in PA (44). These contradictory findings could be transferred to different PA indicators that were measured as well as different time points of the COVID-19 pandemic. In (young) adults, data indicated predominantly a decrease of PA levels during the pandemic. This reduction of PA in (young) adults could be explained by the closure of sports club and other social restrictions.

Furthermore, data indicated a change in the types of sports people engaging in. In particular, an increase was seen in aerobics, jogging, and strengthening training (16, 42, 51) with a shift from strengthening in a gym/sports club to strengthening on their own or with digital media (38, 42). Lockdown measures (especially the closure of sports clubs (44)) may be the reason for this change in types of sports. It seems that those types of sports flourished where no kind of equipment is needed and which can be done at home. For future pandemics, it would be helpful to advance the levels of digital exercise opportunities and make it accessible to all age groups.

Lastly, besides the change in the types of sports, included studies indicated a shift from high intensity to lower intensity, especially in young adults and adults (5, 8, 42, 53). This could be explained by the types of PA people engaged during the lockdown. Activities such as walking, bicycling and other light intensity activities tend to substitute high-intensity sport (37).

Taken together, included studies revealed predominantly a decline in PA from pre to during the COVID-19 pandemic in the German population with shifts in types of sports and intensities. Nevertheless, as our data extraction showed, PA indicators as well as the measured units or categories are quite

heterogeneous (e.g. WHO guideline, type of PA, type of sports, reduction/change of PA, intensity/frequency...). This heterogeneity makes it difficult to synthesize and compare the different findings. Despite this strong regional and methodological heterogeneity, our results seem to be in line with similar reviews including studies from around the world (4, 41, 52, 57).

Besides the methodological heterogeneity, included studies also differ vastly in quality assessment. This can also be seen in other reviews summarizing the changes of PA levels during the pandemic (4, 57). Especially, only one-third of included studies defined PA measure outcomes clearly, which could be responsible for the great heterogeneity in the used PA indicators in this rapid review. A clearer definition would help to narrow down few PA indicators.

Strengths and Limitations

The first strength of the present rapid review is the inclusion of studies investigating changes of PA levels from pre to during COVID-19 among all age groups (children, adolescents, young adults, as well as adults). A further strength of the study is that only data from Germany was included, which enables an analysis of changes in the German population that might be different to other populations. In addition, our rapid review included 12 longitudinal studies, which are more reliable to assess changes from pre to during the pandemic in Germany compared to retrospective data.

Nevertheless, this review has some limitations. First, the methodology used to measure PA were highly heterogeneous, making direct comparison of respective results difficult. Moreover, many studies used retrospective data for the pre COVID-19 data and thus, the accuracy of the reported data may be questionable. Another limitation is the representativeness of the included studies. Many of the studies were conducted in one region and thus are not representative for the German population. Lastly, we only included healthy participants and did not focus on vulnerable groups that might be particularly affected by the pandemic.

Conclusion

This rapid review aims to provide an overarching and holistic picture of PA prevalence changes in Germany during the COVID-19 pandemic from 2020-2021. The included studies revealed that PA levels predominantly decreased within the German population, even if few studies indicated an increase of PA levels in children and adolescents during the first lockdown. Overall, the COVID-19 pandemic seems to reinforce the existing PA inactivity among the population, also referred to as the pandemic of physical inactivity (24). Despite the lack of some quality criteria in the included studies, our conclusion is clear: for future pandemics, restriction policies need to be adapted. In particular, children as well as adults need to be provided sophisticated information about the importance of sufficiently PA especially in specific times of lockdowns. We now know that in times of self-isolation, physical and social restrictions, PA must receive higher priority by decisive stakeholders (e.g. policy makers, school teachers, employers etc.) so that further reductions in PA levels can be avoided and optimal health can be maintained or even enhanced. We suggest that a combination of the provision of PA opportunities for all, mass media campaigns on the health benefits of PA and multisectoral work is key in assisting the population maintain PA levels during future pandemics. Further research should focus on the influence of COVID-19 on PA levels among vulnerable groups, as these groups are neglected so far in existing reviews. ■

Conflict of Interest

The authors have no conflict of interest.

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References

- (1) **ANALYTICS CLARIVATE.** Endnote X9. Philadelphia: Clarivate Analytics; 2020.
- (2) **BECK F, MUTZ M, ENGELS ES, REIMERS AK.** Changes in Physical Activity during the COVID-19 Pandemic—An Analysis of Differences Based on Mitigation Policies and Incidence Values in the Federal States of Germany. *Sports*. 2021; 9: 102. doi:10.3390/sports9070102
- (3) **BRAILOVSKAIA J, TRUSKAUSKAITE-KUNEVICIENE I, KAZLAUSKAS E, GELEZELYTE O, TEISMANN T, MARGRAF J.** Physical activity, mental and physical health during the Covid-19 outbreak: longitudinal predictors of suicide ideation in Germany. *Z Gesundh wiss*. 2022; 1-11. Epub ahead of print. doi:10.1007/s10389-022-01708-0
- (4) **BRAND R, NOSRAT S, SPATH C, TIMME S.** Using COVID-19 Pandemic as a Prism: A Systematic Review of Methodological Approaches and the Quality of Empirical Studies on Physical Activity Behavior Change. *Front Sports Act Living*. 2022; 4: 864468. doi:10.3389/fspor.2022.864468
- (5) **BRANDL C, ZIMMERMANN ME, GÜNTHER F, DIETL A, KÜCHENHOFF H, LOSS J, STARK KJ, HEID IM.** Changes in healthcare seeking and lifestyle in old aged individuals during COVID-19 lockdown in Germany: the population-based AugUR study. *BMC Geriatr*. 2022; 22: 34. doi:10.1186/s12877-021-02677-x
- (6) **BULL FC, AL-ANSARI SS, BIDDLE S, BORODULIN K, BUMAN MP, CARDON G, CARTY C, CHAPUT JP, CHASTIN S, CHOU R, DEMPSEY PC, DIPIETRO L, EKELUND U, FIRTH J, FRIEDENREICH CM, GARCIA L, GICHU M, JAGO R, KATZMARZYK PT, LAMBERT E, LEITZMANN M, MILTON K, ORTEGA FB, RANASINGHE C, STAMATAKIS E, TIEDEMANN A, TROIANO RP, VAN DER PLOEG HP, WARI V, WILLUMSEN JF.** World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med*. 2020; 54: 1451-1462. doi:10.1136/bjsports-2020-102955
- (7) **BURCHARTZ A, ORIWOL D, KOLB S, SCHMIDT SCE, WUNSCH K, MANZ K, NIESSNER C, WOLL A.** Comparison of self-reported & device-based, measured physical activity among children in Germany. *BMC Public Health*. 2021; 21: 1081. doi:10.1186/s12889-021-11114-y
- (8) **BUSSE H, BUCK C, STOCK C, ZEEB H, PISCHKE CR, FIALHO PMM, WENDT C, HELMER SM.** Engagement in Health Risk Behaviours before and during the COVID-19 Pandemic in German University Students: Results of a Cross-Sectional Study. *Int J Environ Res Public Health*. 2021; 18. doi:10.3390/ijerph18041410
- (9) **DOWNES MJ, BRENNAN ML, WILLIAMS HC, DEAN RS.** Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). *BMJ Open*. 2016; 6: e011458. doi:10.1136/bmjopen-2016-011458
- (10) **ENGELS ES, MUTZ M, DEMETRIOU Y, REIMERS AK.** Levels of physical activity in four domains and affective wellbeing before and during the Covid-19 pandemic. *Arch Public Health*. 2021; 79: 122. doi:10.1186/s13690-021-00651-y
- (11) **FINGER JD, MENSINK G, LANGE C, MANZ K.** Health-enhancing physical activity during leisure time among adults in Germany. *Journal of Health Monitoring*. 2017; 2: 35-42. doi:10.17886/rki-gbe-2017-040
- (12) **FUEZEKI E, SCHROEDER J, GRONEBERG DA, BANZER W.** Physical Activity and Its Related Factors during the First COVID-19 Lockdown in Germany. *Sustainability*. 2021; 13. doi:10.3390/su13105711
- (13) **FUEZEKI E, SCHROEDER J, REER R, GRONEBERG DA, BANZER W.** Physical Activity and Well-Being during the Second COVID-19-Related Lockdown in Germany in 2021. *Sustainability*. 2021; 13. doi:10.3390/su132112172
- (14) **GERMAN WEATHER SERVICE.** Monthly Climate Status for Germany. 2019. https://www.dwd.de/DE/leistungen/pbfb_verlag_monat_klimastatus/monat_klimastatus.html [16 August 2022].
- (15) **GERMAN WEATHER SERVICE.** Klimastatusbericht Deutschland. Jahr 2020. https://www.dwd.de/DE/leistungen/klimastatusbericht/publikationen/ksb_2020.pdf?__blob=publicationFile&v=3 [16 August 2022].
- (16) **GIESSING L, KANNEN J, STRAHLER J, FRENKEL MO.** Direct and Stress-Buffering Effects of COVID-19-Related Changes in Exercise Activity on the Well-Being of German Sport Students. *Int J Environ Res Public Health*. 2021; 18. doi:10.3390/ijerph18137117
- (17) **GUTHOLD R, STEVENS GA, RILEY LM, BULL FC.** Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1.6 million participants. *Lancet Child Adolesc Health*. 2020; 4: 23-35. doi:10.1016/S2352-4642(19)30323-2
- (18) **GUTHOLD R, STEVENS GA, RILEY LM, BULL FC.** Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1.9 million participants. *Lancet Glob Health*. 2018; 6: e1077-e1086. doi:10.1016/S2214-109X(18)30357-7
- (19) **HELBACH J, STAHLMANN K.** Changes in Digital Media Use and Physical Activity in German Young Adults under the Covid-19 Pandemic - A Cross-Sectional Study. *J Sports Sci Med*. 2021; 20: 642-654. doi:10.52082/jssm.2021.642
- (20) **HOMMES F, VAN LOON W, THIELECKE M, ABRAMOVICH I, LIEBER S, HAMMERICH R, GEHRKE-BECK S, LINZBACH E, SCHUSTER A, VON DEM BUSCHE K, THEURING S, GERTLER M, MARTINEZ GE, RICHTER J, BERGMANN C, BÖLKE A, BÖHRINGER F, MALL MA, ROSEN A, KRANNICH A, KELLER J, BETHKE N, KURZMANN M, KURTH T, KIRCHBERGER V, SEYBOLD J, MOCKENHAUPT FP, STUDY GROUP B.** SARS-CoV-2 Infection, Risk Perception, Behaviour, and Preventive Measures at Schools in Berlin, Germany, during the Early Post-Lockdown Phase: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2021; 18. doi:10.3390/ijerph18052739
- (21) **HORTON R.** Offline: COVID-19 is not a pandemic. *Lancet*. 2020; 396: 874. doi:10.1016/S0140-6736(20)32000-6
- (22) **HUBER BC, STEFFEN J, SCHLICHTIGER J, GRAUPE T, DEUSTER E, STROUVELLE VP, FISCHER MR, MASSBERG S, BRUNNER S.** Alteration of physical activity during COVID-19 pandemic lockdown in young adults. *J Transl Med*. 2020; 18: 410. doi:10.1186/s12967-020-02591-7
- (23) **JAKOBSSON J, MALM C, FURBERG M, EKELUND U, SVENSSON M.** Physical Activity During the Coronavirus (COVID-19) Pandemic: Prevention of a Decline in Metabolic and Immunological Functions. *Front Sports Act Living*. 2020; 2: 57. doi:10.3389/fspor.2020.00057
- (24) **KOHL HW 3RD, CRAIG CL, LAMBERT EV, INOUE S, ALKANDARI JR, LEETONGIN G, KAHLMEIER S; LANCET PHYSICAL ACTIVITY SERIES WORKING GROUP.** The pandemic of physical inactivity: global action for public health. *Lancet*. 2012; 380: 294-305. doi:10.1016/S0140-6736(12)60898-8
- (25) **AMINI H, HABIBI S, ISLAMOGLU AH, ISANEJAD E, UZ C, DANİYARI H.** COVID-19 pandemic-induces physical inactivity: the necessity of updating the Global Action Plan on Physical Activity 2018-2030. *Environmental Health and Preventive Medicine*. 2021; 26: 32. doi:10.1186/s12199-021-00955-z
- (26) **KOLETZKO B, HOLZAPFEL C, SCHNEIDER U, HAUNER H.** Lifestyle and Body Weight Consequences of the COVID-19 Pandemic in Children: Increasing Disparity. *Ann Nutr Metab*. 2021; 77: 1-3. doi:10.1159/000514186
- (27) **KOOPMANN A, MUELLER A, LEMENAGER T, HILLEMACHER T, KIEFER F, GEORGIADOU E.** The impact of the lockdown in spring 2020 during the COVID-19 pandemic on eating and sports behavior - results of an online survey. *Diabetol Stoffwechs*. 2021; 16: 498-505. doi:10.1055/a-1532-4395
- (28) **KRIST L, DORNQUAST C, REINHOLD T, ICKE K, DANQUAH I, WILLICH SN, BECHER H, KEIL T.** Predictors of Changes in Physical Activity and Sedentary Behavior during the COVID-19 Pandemic in a Turkish Migrant Cohort in Germany. *Int J Environ Res Public Health*. 2021; 18. doi:10.3390/ijerph18189682
- (29) **KURZ D, BRAIG S, GENUENEIT J, ROTHENBACHER D.** Lifestyle changes, mental health, and health-related quality of life in children aged 6-7 years before and during the COVID-19 pandemic in South Germany. *Child Adolesc Psychiatry Ment Health*. 2022; 16: 20. doi:10.1186/s13034-022-00454-1
- (30) **LEAR SA, HU W, RANGARAJAN S, GASEVIC D, LEONG D, IQBAL R, CASANOVA A, SWAMINATHAN S, ANJANA RM, KUMAR R, ROSENGREN A, WEI L, YANG W, CHUANGSHI W, HUAXING L, NAIR S, DIAZ R, SWIDON H, GUPTA R, MOHAMMADIFARD N, LOPEZ-JARAMILLO P, OGUZ A, ZATONSKA K, SERON P, AVEZUM A, POIRIER P, TEO K, YUSUF S.** The effect of physical activity on mortality and cardiovascular disease in 130 000 people from 17 high-income, middle-income, and low-income countries: the PURE study. *Lancet*. 2017; 390: 2643-2654. doi:10.1016/S0140-6736(17)31634-3

- (31) **LEE IM, SHIROMA EJ, LOBELO F, PUSKA P, BLAIR SN, KATZMARZYK PT; LANCET PHYSICAL ACTIVITY SERIES WORKING GROUP.** Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*. 2012; 380: 219-229. doi:10.1016/S0140-6736(12)61031-9
- (32) **MAERTL T, DE BOCK F, HUEBL L, OBERHAUSER C, COENEN M, JUNG-SIEVERS C, ON BEHALF OF THE COSMO STUDY TEAM.** Physical Activity during COVID-19 in German Adults: Analyses in the COVID-19 Snapshot Monitoring Study (COSMO). *Int J Environ Res Public Health*. 2021; 18. doi:10.3390/ijerph18020507
- (33) **MARCKHOFF M, SIEBALD M, TIMMESFELD N, JANSSEN M, ROMER G, FÖCKER M.** COVID-19: Effects of Pandemic Related Restrictions on Physical Activity, Screen Time, and Mental Well-being in German adolescents. *Z Kinder Jugendpsychiatr Psychother*. 2022. doi:10.1024/1422-4917/a000867
- (34) **MATA J, WENZ A, RETTIG T, REIFENSCHIED M, MÖHRING K, KRIEGER U, FRIEDEL S, FIKEL M, CORNESSE C, BLOM AG, NAUMANN E.** Health behaviors and mental health during the COVID-19 pandemic: A longitudinal population-based survey in Germany. *Soc Sci Med*. 2021; 287: 114333. doi:10.1016/j.socscimed.2021
- (35) **MOJTAHEZDADEH N, NEUMANN FA, ROHWER E, NIENHAUS A, AUGUSTIN M, HARTH V, ZYRIAX BC, MACHE S.** The Health Behaviour of German Outpatient Caregivers in Relation to the COVID-19 Pandemic: A Mixed-Methods Study. *Int J Environ Res Public Health*. 2021; 18. doi:10.3390/ijerph18158213
- (36) **MOOLA S, MUNN Z, TUFANARU C, AROMATARIS E, SEARS K, SFETC R.** Chapter 7: Systematic reviews of etiology and risk. In: E. A. Munn Z, editors. *JBI Manual for Evidence Synthesis*. 2020.
- (37) **MUTZ M, GERKE M.** Sport and exercise in times of self-quarantine: How Germans changed their behaviour at the beginning of the Covid-19 pandemic. *Int Rev Sociol Sport*. 2020. doi:10.1177/1012690220934335
- (38) **MUTZ M, MÜLLER J, REIMERS AK.** Use of Digital Media for Home-Based Sports Activities during the COVID-19 Pandemic: Results from the German SPOVID Survey. *Int J Environ Res Public Health*. 2021; 18: 4409. doi:10.3390/ijerph18094409
- (39) **MUTZ M, REIMERS AK.** Leisure time sports and exercise activities during the COVID-19 pandemic: a survey of working parents. *German Journal of Exercise and Sport Research*. 2021; 51: 384-389. doi:10.1007/s12662-021-00730-w
- (40) **PALMER K, BSCHADEN A, STROEBELE-BENSCHOP N.** Changes in lifestyle, diet, and body weight during the first COVID 19 'lockdown' in a student sample. *Appetite*. 2021; 167: 105638. doi:10.1016/j.appet.2021.105638
- (41) **PARK AH, ZHONG S, YANG H, JEONG J, LEE C.** Impact of COVID-19 on physical activity: A rapid review. *J Glob Health*. 2022; 12: 05003. doi:10.7189/jogh.12.05003
- (42) **PIETSCH S, LINDER S, JANSEN P.** Well-being and its relationship with sports and physical activity of students during the coronavirus pandemic. *German Journal of Exercise and Sport Research*. 2022; 52: 50-57. doi:10.1007/s12662-021-00750-6
- (43) **PRESS AND INFORMATION OFFICE OF THE FEDERAL GOVERNMENT.** Agreement: Guidelines to slow the spread of the coronavirus 2020. <https://www.bundesregierung.de/breg-en/news/guidelines-to-slow-the-spread-of-the-coronavirus-1731708> [16 August 2022].
- (44) **PRESS AND INFORMATION OFFICE OF THE FEDERAL GOVERNMENT.** Meeting of the chancellor Angela Merkel with the heads of government of the German Federal States on 22 March 2020; 2020. https://home.army.mil/wiesbaden/application/files/4815/8522/4501/22_MAR_2020_Fed_Gov_contact_rules_and_closures-POSTED.pdf [16 August 2022].
- (45) **SCHLICHTIGER J, STEFFEN J, HUBER BC, BRUNNER S.** Physical activity during COVID-19 lockdown in older adults. *J Sports Med Phys Fitness*. 2021; 61: 164-166. doi:10.23736/s0022-4707.20.11726-2
- (46) **SCHMIDT SCE, ANEDDA B, BURCHARTZ A, EICHSTELLER A, KOLB S, NIGG C, NIESSNER C, ORIWOL D, WORTH A, WOLL A.** Physical activity and screen time of children and adolescents before and during the COVID-19 lockdown in Germany: a natural experiment. *Sci Rep*. 2020; 10: 21780. doi:10.1038/s41598-020-78438-4
- (47) **SCHMIDT SCE, BURCHARTZ A, KOLB S, NIESSNER C, ORIWOL D, HANSEN-DOOSE A, WORTH A, WOLL A.** Zur Situation der körperlich-sportlichen Aktivität von Kindern und Jugendlichen während der COVID-19 Pandemie in Deutschland: Die Motorik-Modul Studie (MoMo). *KIT Scientific Working Papers*. 2021; 165.
- (48) **SCHMIDT SCE, BURCHARTZ A, KOLB S, NIESSNER C, ORIWOL D, WOLL A.** Influence of socioeconomic variables on physical activity and screen time of children and adolescents during the COVID 19 lockdown in Germany: the MoMo study. *German Journal of Exercise and Sport Research*. 2021. doi:10.1007/s12662-021-00783-x
- (49) **SCHUCH FB, VANCAMPFORT D, FIRTH J, ROSENBAUM S, WARD PB, SILVA ES, HALLGREN M, PONCE DE LEON A, DUNN AL, DESLANDES AC, FLECK MP, CARVALHO AF, STUBBS B.** Physical Activity and Incident Depression: A Meta-Analysis of Prospective Cohort Studies. *Am J Psychiatry*. 2018; 175: 631-648. doi:10.1176/appi.ajp.2018.17111194
- (50) **SEIDLER A, NUSSBAUMER-STREIT B, APFELBACHER C, ZEEB H, FÜR DIE QUERSCHNITTS AGRRDKPHZC.** Rapid Reviews in the Time of COVID-19 - Experiences of the Competence Network Public Health COVID-19 and Proposal for a Standardized Procedure. *Gesundheitswesen (Bundesverband der Ärzte des Öffentlichen Gesundheitsdienstes (Germany))*. 2021; 83: 173-179. doi:10.1055/a-1380-0926
- (51) **SONZA A, DA CUNHA DE SÁ-CAPUTO D, SARTORIO A, TAMINI S, SEIXAS A, SANUDO B, SÜSSENBACH J, PROVENZA MM, XAVIER VL, TAIAR R, BERNARDO-FILHO M.** COVID-19 Lockdown and the Behavior Change on Physical Exercise, Pain and Psychological Well-Being: An International Multicentric Study. *Int J Environ Res Public Health*. 2021; 18. doi:10.3390/ijerph18073810
- (52) **STOCKWELL S, TROTT M, TULLY M, SHIN J, BARNETT Y, BUTLER L, MCDERMOTT D, SCHUCH F, SMITH L.** Changes in physical activity and sedentary behaviours from before to during the COVID-19 pandemic lockdown: a systematic review. *BMJ Open Sport Exerc Med*. 2021; 7: e000960. doi:10.1136/bmjsem-2020-000960
- (53) **TSCHUSCHKE L, SCHRÖDER J.** COVID-19-bedingte Kontaktbeschränkungen in Deutschland und Veränderungen der körperlichen Aktivität. *B&G Bewegungstherapie und Gesundheitssport*. 2021; 37: 66-71. doi:10.1055/a-1381-0374
- (54) **WENDTLANDT M, WICKER P.** The Effects of Sport Activities and Environmentally Sustainable Behaviors on Subjective Well-Being: A Comparison Before and During COVID-19. *Front Sports Act Living*. 2021; 3: 659837. doi:10.3389/fspor.2021.659837
- (55) **WHO.** Global Recommendation on Physical Activity for Health Geneva, Switzerland: WHO; 2010.
- (56) **WHO.** Statement on the second meeting of the international health regulations (2005) emergency committee regarding the outbreak of novel coronavirus (2019-ncov): WHO; 2020. [https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)) [16 August 2022].
- (57) **WUNSCH K, KIENBERGER K, NIESSNER C.** Changes in Physical Activity Patterns Due to the COVID-19 Pandemic: A Systematic Review and Meta-Analysis. *Int J Environ Res Public Health*. 2022; 19. doi:10.3390/ijerph19042250
- (58) **WUNSCH K, NIGG C, NIESSNER C, SCHMIDT SCE, ORIWOL D, HANSEN-DOOSE A, BURCHARTZ A, EICHSTELLER A, KOLB S, WORTH A, WOLL A.** The Impact of COVID-19 on the Interrelation of Physical Activity, Screen Time and Health-Related Quality of Life in Children and Adolescents in Germany: Results of the Motorik-Modul Study. *Children (Basel)*. 2021; 8. doi:10.3390/children8020098

Körperliche Aktivität während der COVID-19-Pandemie: Veränderungen in der Prävalenz körperlicher Aktivität in Deutschland

Physical Activity in the Face of the COVID-19 Pandemic: Changes in Physical Activity Prevalence in Germany

ERWEITERTES ABSTRACT

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Aufbau des Papers

Körperliche Aktivität ist eine wichtige Komponente zur Förderung der körperlichen und geistigen Gesundheit und zur Prävention von Krankheiten. Die COVID-19 Pandemie und die damit einhergehenden Maßnahmen führten zu entscheidenden Veränderungen im täglichen Leben der Bevölkerung und damit auch im Bewegungsverhalten. Diese Arbeit fasst die aktuelle Literatur über die Veränderung der körperlichen Aktivität während der COVID-19-Pandemie in der deutschen Bevölkerung zusammen.

Literatur

Als Grundlage dienen Untersuchungen und quantitative Analysen von Veränderungen der körperlichen Aktivität im Verlauf der COVID-19 Pandemie. Dabei werden empirische Studien von Kinder und Jugendlichen und auch Erwachsenen aus Deutschland einbezogen.

Ergebnisse und Diskussion

Die Ergebnisse deuten überwiegend auf einen Rückgang der körperlichen Aktivität in allen Altersgruppen hin. Dieser Rückgang könnte durch die Schließung von Sportvereinen und anderen sozialen Einschränkungen erklärt werden. Allerdings zeigte sich auch während des ersten Lockdowns in wenigen Studien eine Zunahme des Aktivitätsverhalten, insbesondere bei Kindern und Jugendlichen. Dies könnte auf die vermehrte Freizeit aufgrund von Schul- und Kindergartenschließungen zurückzuführen sein. Außerdem veränderten sich Sportarten und Intensitäten während der Pandemie. Die Qualitätsbewertung der eingeschlossenen Studien ergab einen Mangel an adäquat berichteter gemessener körperlicher Aktivität sowie unzureichende Berichterstattung der Studienergebnisse.

Was ist neu und relevant?

Die Übersichtsarbeit zeigt die Veränderungen der körperlichen Aktivität bei Kindern, Jugendlichen und (jungen) Erwachsenen in Deutschland im Verlauf der COVID-19 Pandemie auf.

Methodische Einschränkungen

Die verwendete Methodologie in den eingeschlossenen Studien war sehr heterogen, was einen direkten Vergleich der einzelnen Studien schwierig macht. Außerdem haben viele Studien retrospektiv die Pre-COVID-19 Aktivitätslevel erfasst, was die Genauigkeit der berichteten Daten etwas in Frage stellt. Viele eingeschlossene Studien sind außerdem eher regional und damit nicht repräsentativ für Deutschland.

Schlussfolgerungen für die Praxis

- Sowohl Kinder als auch Erwachsene müssen differenziert über die Bedeutung einer ausreichenden Bewegung informiert werden, insbesondere in Zeiten von Pandemien
- Um eine weitere Verringerung der körperlichen Aktivität zu vermeiden und eine optimale Gesundheit zu erhalten oder sogar zu verbessern, muss körperliche Aktivität von den entscheidenden Interessengruppen (z. B. politischen Entscheidungsträgern, Lehrern, Arbeitgebern usw.) eine höhere Priorität eingeräumt werden.
- Eine Kombination aus der Bereitstellung von Bewegungsmöglichkeiten für alle, Massenkampagnen über die gesundheitlichen Vorteile von Bewegung und Sektor übergreifender Arbeit kann der Schlüssel zur Unterstützung der Bevölkerung bei der Aufrechterhaltung des körperlichen Aktivitätsniveaus während zukünftiger Pandemien sein.

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