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## Access denied: the shortage of digitized fitness resources for people with disabilities

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### ABSTRACT

**Purpose:** The COVID-19 pandemic has drastically impacted every aspect of life, including how people exercise and access fitness resources. Prior to COVID-19, the global burden of disease attributable to sedentary behavior disproportionately affected the health of people with disabilities (PWD). This pre-existing gap has only widened during COVID-19 due to limited disability-friendly digital exercise resources. The purpose of this work is to examine this gap in accessibility to digital fitness resources, and re-frame the notion of accessibility to suit the contemporary context.

**Materials and methods:** Using machine learning, video titles/descriptions about home exercise ordered by relevance populated on YouTube between 1 January 2020 and 30 June 2020 were examined.

**Results:** Using the search terms, "home exercise," "home-based exercise," "exercise no equipment," "workout no equipment," "exercise at home," or "at-home exercise," 700 videos ordered by relevance included 28 (4%) that were inclusive of participants with disabilities. Unfortunately, most digital fitness resources are therefore inaccessible to PWD. The global pause the pandemic has induced may be the right moment to construct a comprehensive, indexed digital library of home-based fitness video content for the disabled. There is a further need for more nuanced understandings of accessibility as technological advancements continue.

### ARTICLE HISTORY

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### KEYWORDS

Accessibility; inclusive; home exercise; people with disabilities; digital resources

### ► IMPLICATIONS FOR REHABILITATION

- Physical activity is incredibly important to the quality of life and health of all people.
- Physical activity levels, however, remain lower among persons with disabilities.
- Access to disability-friendly resources remains a challenge and worsened by the circumstances of COVID-19 due to an apparent lack of digital fitness resources for persons with disabilities.
- A broader and comprehensive definition of accessibility must recognize digital advances and access to physical activity for persons with disabilities must feature digital resources.

The Coronavirus disease 2019 (COVID-19) pandemic has dramatically altered nearly every aspect of life, including the activities necessary for maintaining good health. This pathogen of the century [1] has inspired people to adopt new health-related behaviors such as "social distancing" (sometimes referred to as "physical distancing") [2] and to reorient away from traditional places of work, worship, study, socialization, fitness, and recreation in favor of creating home-based versions of the same. Before COVID-19,

and despite evidence that regular physical exercise is integral to physical and mental wellness, the global burden of disease attributable to sedentary behavior has had disproportionate impacts on people with disabilities (PWD) [3]. Unfortunately, this pre-existing gap in access to physical activity for PWD has only widened during COVID-19 [4].

Sports, exercise, and recreational centers have been particularly hard-hit by the pandemic, as facility utilization was (and remains)

heavily restricted. COVID-19-related business model modifications enjoyed by restaurants and retail stores (e.g., offering contactless drop-offs or curbside pick-ups [5]) were not feasible for fitness destinations. However, unlike during the Spanish Flu, unprecedented access to online digital content has enabled the world to maintain connectedness to their recreational and fitness communities, while also accessing direct health and fitness-related programs. But if, in the setting of COVID-19 quarantines, people must arrange for physical activity from home, the critical question for disability advocates is: are current digitized fitness resources accessible?

Workout apps such as Fitbit Coach and Kineticcoach [6] do provide users with tailored exercise options, and YouTube, the second most-used global search engine after Google [7] houses millions of home exercise videos that feature all variations of length, intensity, and exercise type. Unfortunately, these resources are largely inaccessible to PWD. This manifests in two ways. Firstly, video content rarely features workouts that are clearly identified as adapted and/or adaptable to people with a range of impairments. Of the 700 most relevant videos populated on YouTube between 1 January 2020 and 30 June 2020 using the search terms, “home exercise,” “home-based exercise,” “exercise no equipment,” “workout no equipment,” “exercise at home,” or “at-home exercise,” the terms (Adaptive, Adapted, Accessible, Para, Paralympic, Disabled sport or exercise, Disability sport or exercise, Differently-abled sport or exercise, Disability-friendly, Wheelchair-accessible, Inclusive sport or exercise) appeared a mere 28 times in video transcriptions, titles, and descriptions. Secondly, the vast majority of YouTube videos have no professional closed captions or audible description, rendering them inaccessible to those with hearing or visual impairment. Of note, the quality of automated subtitles on YouTube has long been criticized, and few YouTubers invest time in writing their own captions. Deaf YouTube influencer, Rikki Poynter, went so far as starting a social media campaign, “#NoMoreCRAPtions”, to underline this point [8].

A contemporary definition of digital accessibility is broad and comprehensive, encompassing availability of reliable internet with sufficient bandwidth, affordable technology (i.e., a laptop), vetted resources within the internet, and connection to experts in disability health. This global pause may be the exact right moment to construct a comprehensive, indexed digital library of home-based physical activity video content, tailored to various disabilities and skill levels, and committed to contemporary notions of accessibility. Comparable model has been developed through free apps, such as Fitness for Amputees by Ottoblock and Universal Fitness Innovation and Transformation (UFIT). These interactive apps provide physical activity exercises for various amputees and differing levels of activity and instruction is offered in various languages. These landmark applications are motivation for creating high-quality and freely available digital physical activity resources for people with other disabilities as well [9,10]. Another current resource for PWDs is the Model Systems Knowledge Translation Center which provides detailed information and guidance on exercise options for persons living with spinal cord injury and other disabilities [11]. Given that one of the fundamental challenges for PWDs is their risk for financial instability, access to free downloadable digital resources could help in addressing the socio-economic gap, thus preventing PWDs from pursuing paid physical activities, such as gym memberships. Content would be strengthened if workout leaders had an impairment or experience working with PWD, to ensure appropriate customization to the functional needs and safety considerations of end users. Globally,

balanced representation in both content and language(s) would also be important, as cultural awareness of how people exercise, what cues are common, and what kind of equipment people have/do not have access to in their homes, dictates content relevance. Finally, as one of the shortcomings of digital solutions is that they are commonly inaccessible to those with inconsistent Internet connections, whether due to proximity or funds to support an internet plan [12], the option of downloading video content could help facilitate access. Barriers to physical activity could still exist for PWDs who do not have a technological device or stable internet connection. This highlights the necessary action in improving accessibility to physical activity for PWDs. It is our hope that this work will drastically improve accessibility to PWDs who do have such technology and shed light on the persisting barriers for those who do not.

While the need for digitized fitness resources has been amplified by recent lockdowns and business closures, disabled people have always needed safe digitized fitness resources that can be easily accessed from home, and would have benefitted from a greater diversity of and access to exercise resources long before the COVID-19 outbreak.

During the YouTube analysis, we have conducted, some channels were found to have high caliber physical activity materials for PWDs. MoveUnited and Disability Sport Northern Ireland are examples of channels that are dedicated to helping PWDs and disabled athletes. Notwithstanding, the small amount of subscribers makes these channels difficult to find using typical search terms for exercise videos. Because of this, fortifying accessible digital fitness resources would offer health and wellness benefits to the global disabled community. Further, it would guidepost modern society’s path to a more inclusive, equitable, and responsive digital landscape in the post-COVID-19 era.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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