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**Article:**

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## Measures

The presence of a mental health condition was ascertained by a series of options following the question: “*Are your day-to-day activities limited because of a health condition or disability which has lasted, or is expected to last, at least 12 months? Include conditions related to old age, sensory deficits, mobility problems, developmental conditions, learning impairments and mental health*” followed by a list of 56 health conditions. Any participant who answered ‘yes, limited a lot’ or ‘yes, limited a little’ to one of 13 mental health conditions (based on the International Classification of Diseases Version 11 (ICD11, World Health Organization, 2019) mental, behavioural, and neurodevelopmental disorders classification) were included in the sample. These were anxiety, ADHD, alcohol or drug addiction, Alzheimer’s/dementia, Autism/Asperger’s, bipolar, depression, eating disorder, learning disability, panic attacks, PTSD, schizophrenia and OCD. Individuals could note the presence of multiple conditions.

### ***Participant Characteristics***

**Demographics.** Respondents were also asked to provide their *parkrun* ID number to enable their survey responses to be matched to the *parkrun* database that holds their *parkrun* registration details (e.g. gender, postcode, activity level at registration) and participation information (e.g. number of *parkruns* completed and years registered). Demographic data included date of birth, gender, ethnicity, employment and socioeconomic status. Gender was assessed as Male or Female. Participants were asked to indicate which of 17 options best described their ethnicity, with an additional option of “Other ethnic group”, and a further option of “I’d rather not say”. Responses were then collapsed into Black, Asian, and Minority Ethnic, White, or Prefer not to Say. Employment was identified as full-time paid employment (self-employed, currently on maternity or paternity leave), full-time paid employment but currently on sick leave, part-time paid employment, fully, retired, student, unemployed and not working, or ‘other’ which includes homemakers, those who indicated they would rather not say, and those who are retired but still in paid employment. By using the postcodes given by participants at *parkrun* registration, socioeconomic status was assessed using the index of multiple deprivation (IMD). Specifically, the IMD uses Lower Level Super Output Areas (LSOA), which represent the units from which Population Census data is created, and onto which socio-economic contextual data is mapped by the Office of National Statistics (Office of National Statistics, 2017). IMD scores were classified into four quartiles (Q1-Q4) ranging from the most deprived areas (Q1) to the least deprived (Q4).

### ***Health and Wellbeing Measures***

***parkrun* data.** When sufficient personal details were provided to enable data matching, additional data was exported from the *parkrun* database. This included the following: postcode provided at *parkrun* registration; date of *parkrun* registration; club status at registration (attached or unattached), and total number of *parkruns* completed since registration.

**Life satisfaction, subjective health status and mental wellbeing.** Participants were asked “*Overall, how satisfied are you with your life nowadays?*” with possible responses rated on a 10-point visual analogue scale where 0 is “not at all”, and 10 is “completely.” This measure is adopted from one of four personal wellbeing questions in the UK’s Office of National Statistics (ONS) Annual Population Survey (ONS, 2018). Subjective health status was measured using the EuroQoL EQ-5D-5L (Brooks & Group, 1996) which asks participants to describe their health that day on five dimensions (mobility, self-care, ability to undertake usual activities, pain, anxiety/depression). These dimensions are scored from no problems (1) to extreme problems (5), with possible scores ranging from 5-25. This scale has been found to be valid and reliable in a variety of settings and populations (Feng et al., 2021). The Short Warwick-Edinburgh Mental Well-being scale (SWEMWBS) (Tennant et al., 2007)

asks: “*Below are some statements about feelings and thoughts. Please tick the box that describes your experience of each over the last 2 weeks.*” Seven statements are listed asking individuals about their experiences of: feeling optimistic, feeling useful, feeling relaxed, dealing with problems well, thinking clearly, feeling close to people, able to make up my own mind about things. The seven dimensions are scored from none of the time (1) to all of the time (5), with possible scores ranging from 7 to 35. The SWEMWBS is valid and reliable among general populations, as well as service-users with diagnosed mental illness (Vaingankar et al., 2017).

**Perceived impact of running/walking at parkrun.** The perceived impact of parkrun was measured using the following: “*Thinking about the impact of parkrun on your health and wellbeing, to what extent has running or walking at parkrun changed?*” Respondents (runners/walkers or runners/walkers who volunteer) were presented with a list of 15 potential impacts in the original survey. In the current study, based on the literature and our hypotheses, ten of these impacts were analysed (“*your physical health*”, “*your mental health*”, “*your happiness*”, “*the amount of time you spend outdoors*”, “*your ability to be active in a safe environment*” “*your sense of personal achievement*”, “*your overall lifestyle choices*”, “*your confidence*”, “*your fitness*” and “*your ability to manage your health condition, disability, or illness?*”). Participants were asked to rate each one on a 5-point scale: much worse (1), worse (2), no impact (3), better (4), much better (5). The answer choices were displayed in randomised order to help reduce response bias. The final choice was “other” and, if selected, respondents were asked to specify the impact. For the current analysis, responses were re-coded into continuous variables.

### ***Perceptions of Social Inclusion***

**Social Interactions and Relationship Opportunities.** In the present study, the following questions collectively refer to an individuals’ perception of social inclusion, though previous parkrun papers have referred to them separately as Social Interactions and Relationship Opportunities respectively. Two questions were used to ascertain participants’ social interactions and relationship opportunities at parkrun using the following: “*Who do you usually interact with at parkrun? i.e., those you attend and communicate with at parkrun. Please tick all that apply*” followed by a list of options (family, friends, partner, neighbours, colleagues, members of their sports club, members of their non-sports club, strangers, other parkrun participants). The total number of interactions were calculated for each individual (0-9), and further recoded into 0-1, 2-3 and 4 or more. Additionally, interactions were coded as Unknown (the count for *strangers* plus *other parkrun participants*) and Known (the count for all others). Lastly, participants were asked: “*In terms of relationships, what opportunities has parkrun opened up for you? Please tick all that apply.*” The following response options were offered: “*I have met new people of a similar background*”; “*I have met new people of a different background*”; “*I feel closer to my existing friends or family*”; “*I feel part of my community*”; “*I have joined a sports club*”; “*I have joined a non-sports club, organisation or group*”; “*It has made no difference to me*”; and “*It has allowed me to spend time on my own.*” Joined a Club (yes/no to joined a sports club or non-sports club) and Met New People (yes/no to met new people of a similar background or met new people of a different background) were created and used as variables.