

parkrun participation, impact and perceived social inclusion among runners/walkers and volunteers with mental health conditions.

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1 As a way of moving beyond pathologizing mental illness, there is a burgeoning
2 emphasis on mental health recovery. Mental health recovery is conceptualized as creating a
3 worthwhile life through relationships, social roles, and renewed self-identity (Tew et al.,
4 2012; Watts & Higgins. 2016). Considering this, recovery frameworks have been proposed,
5 such as the CHIME, which subsumes Connectedness, Hope and Optimism about the Future,
6 Identity, Meaning in Life and Empowerment (Leamy et al., 2011), or its extended, and
7 service-user informed conceptualization, the CHIME-D, which also includes Difficulties
8 (Stuart et al., 2017). Four domains of action have been proposed for clinicians as ‘best
9 practice’ in recovery-oriented practice: “promoting citizenship, organizational commitment,
10 supporting personally defined recovery, and working relationship” (Le Boutillier et al., 2011,
11 p.1474). However, Slade (2012) contends that the highly valuable domain of promoting
12 citizenship, through improving community integration and social inclusion, has been the least
13 researched. Social inclusion may be challenging to define and the broad scope may limit
14 research focus. Nonetheless, social inclusion may include social participation, social support
15 and community involvement (Filia et al., 2019). Furthermore, researchers have stressed the
16 importance of using multi-systemic interventions that promote social inclusion and have
17 urged clinicians to move beyond individual therapies by understanding and facilitating
18 community-level engagement (Rhodes & De Jager, 2014; Smyth et al., 2011). Identifying
19 ways to promote social inclusion is an important strategy for mental health recovery.

20 Recreation or leisure may be contexts in which social inclusion is promoted (Fenton
21 et al., 2017). Community-based recreation can be understood as, “formal and informal
22 engagement in free-time activities with others in the community” (Gallant et al., 2020, p.
23 328). Socially inclusive programs are those in which individuals feel included and welcomed,
24 and socially inclusive community-based recreation can lead to broadened social networks and
25 feelings of belonging for individuals with mental illness (Fenton et al., 2016, 2017; Webber

26 et al., 2017). Sells and colleagues (2006) coined the term ‘community arenas’ to describe
27 recreation spaces in which those with mental illness can fully participate without having to
28 worry about being defined by their mental health challenges. These arenas may be those
29 intended primarily for individuals with mental illness or may be public or private leisure or
30 recreation spaces/facilities (Sells et al., 2006). It is not the actual physical space that allows
31 for a spectrum of recovery, but rather the view and understanding that those participating are
32 not viewed as service-users or patients, but as active community members participating in
33 recreation (Fenton et al., 2016). Some researchers have examined these ‘community arenas’
34 in football (Benkwitz & Healy, 2019; Benkwitz et al., 2019; Jeanes et al., 2018; Taylor &
35 Pringle, 2021) and in outdoor or nature-based programming for mental health (Cooley et al.,
36 2021; Hubbard et al., 2020; Picton et al., 2020). They have found activity engagement in
37 these arenas to be enjoyable and valuable for those with mental illness, highlighting the broad
38 benefits of activity participation on mental health, however, they focus on the activity itself.
39 Therefore, there remains a need to also understand other forms of engagement in these arenas
40 in other ways that are not simply actively engaging in the activity at hand.

41 Volunteering is a way that individuals can be engaged with activity in community
42 arenas. Among those with mental illness specifically, those who volunteer self-report better
43 health status compared to those who do not volunteer (Held et al., 2020). In a small sample of
44 individuals with mental illness ($N= 46$), those who volunteered reported greater levels of
45 hope, better mental health outcomes, and greater medication adherence and condition
46 management (Firmin et al., 2015). Volunteering has been proposed to have a therapeutic
47 effect for those with mental illness (Fegan et al., 2014; Zakaria et al., 2021), by fostering
48 feelings of productivity and self-satisfaction. Research examining volunteering and
49 depressive symptoms revealed that social connectedness explains their relationship;
50 highlighting that the social context in which the volunteering takes place may be just as

51 important for mental health as the volunteer role itself (Creaven et al., 2018). Nonetheless,
52 community-based recreational programs where there are movement and volunteer
53 components, have yet to be examined together for health and wellbeing benefits among
54 individuals with mental health conditions. Community-based opportunities such as *parkrun*
55 (written with a lowercase ‘p’ consistent with their branding) might offer an opportunity to
56 holistically explore the two components of activity and volunteering.

57 The *parkrun* organisation offers free, 5-km, events wherein participants are
58 encouraged to walk or run. The events are community-based and volunteer-led, and
59 individuals can choose to participate as a runner/walker, a runner/walker who volunteers or a
60 volunteer only. Approximately 20,000 individuals volunteer at *parkrun* each week in the UK,
61 with around 175,000 volunteers each year (parkrun, 2021a). Briefly, volunteers may either be
62 part of a permanent core team of Ambassadors or may take part on a more casual basis with
63 no obligation (Hallett et al., 2020). These episodic or non-permanent roles include tail
64 walking, marshalling, timekeeping and scanning barcodes, among others (parkrun, 2021b). In
65 line with the organization’s welcoming and inclusive ethos, runners and walkers can engage
66 in *parkrun* as often or as little as they like, with no obligations. In fact, *parkrun* actively
67 encourages those of all speeds and abilities to participate (Hindley, 2020). As such, given the
68 organizations’ structure provides opportunities for both running/walking and volunteering,
69 *parkrun* could provide an opportunity to understand the unique and combined effects of
70 running and volunteering participation on mental health recovery.

71 The purpose of the current study is to quantitatively explore the differences in
72 *parkrun* participation impacts and perceived social inclusion outcomes among active
73 participants (i.e., runners/walkers) and volunteers with mental a mental health condition. This
74 raises the following specific research questions:

- 75 1. Do individuals who volunteer exclusively differ from runners/walkers who volunteer or
76 runners/walkers (using demographic, health-related and *parkrun*-related measures)?
77 2. Are there differences in perceived impact from running/walking at parkrun for those who
78 run/walk and volunteer compared to those who run/walk exclusively?
79 3. Are there differences in perceptions of social inclusion between those who run/walk and
80 volunteer compared to those who run/walk exclusively?

81 We hypothesize that individuals who run/walk and volunteer will report more
82 favourable *parkrun* impact outcomes compared to those who run/walk exclusively. We
83 further hypothesize that there will be a relationship between participation type and perceived
84 social inclusion.

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Methods

Participants and Procedure

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This study is a secondary analysis of *parkrun*'s 2018 UK Health and Wellbeing
91 Survey. Ethical approval for the initial study was granted by Sheffield Hallam University
92 Research Ethics Committee. Additional approval for this study was granted by the *parkrun*
93 Research Board and the University of Toronto ethics board (00040320). Full details of the
94 initial survey have been detailed elsewhere (Quirk et al., 2021). Briefly, the original 2018
95 study used an online survey which was emailed to all *parkrun* registrants in the UK over 16
96 years of age. It included a range of questions relating to health, wellbeing, physical activity,
97 parkrun participation, and impacts. The sample in this current cross-sectional study was
98 drawn from the larger original study and includes anyone who self-reported a mental health
99 diagnosis (currently or ever). Full details on the study's measures can be found in

100 *Supplementary File 1*.

Data Analysis

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103 101 participants were removed prior to analysis as they had registered with *parkrun*
104 but had not yet participated. Data were then screened for outliers and missing data prior to
105 commencing analyses. Preliminary analyses included descriptive statistics (e.g., mean,
106 standard deviations, frequencies, bivariate correlations) of the overall sample, as well as
107 stratified subsample groups by runners/walkers vs volunteer vs runners/walkers who
108 volunteer. At this point, volunteers were removed from subsequent analysis due to their small
109 numbers.

110 Group differences on perceived impacts between a) runners/walkers and b)
111 runners/walkers who volunteer were examined using MANOVA, using Wilks Lambda as the
112 test statistic and partial eta squared to measure the effect size of the model. Cohen's *d* tests of
113 effect size (small: $d=0.2$, medium: $d= 0.5$, large: $d= 0.8$; Cohen, 1988) with 95% confidence
114 intervals (CI) were run to compare means which statistically significantly differed in the
115 univariate analyses. Chi-square analyses were used to assess group differences between a)
116 runners/walkers and b) runners/walkers who volunteer for perceived social inclusion
117 variables. Cramer's *V* was used as an estimate of effect size, with cut-offs varying depending
118 on the amount of categories analysed (see Volker, 2006). For continuous variables that
119 significantly differed between groups, post hoc testing was run with Tukey's HSD. For
120 categorical variables that significantly differed between groups, chi square difference tests
121 were run. All data were analysed using IBM SPSS Statistics (Version 26). Missing data was
122 left in the dataset and analysed based on complete cases.

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Results

Table 1. Sample characteristics.

	Overall Sample <i>N</i> =1,661	Runners/walkers <i>N</i> = 977	Runners/walkers who volunteer <i>N</i> =645	Volunteers <i>N</i> =39
Age (years) Mean (SD; n)	43.43 (12.80;1,652)	41.89 ^a (13.37; 973)	45.66 ^a (11.55; 640)	45.62 (12.47; 39)
Gender	N=1,263	N=714	N=518	N=31
Female n (%)	828 (66%)	466 (65%)	338 (65%)	24 (77%)
Male n (%)	435 (34%)	248 (35%)	180 (35%)	7 (23%)
Ethnicity	N=1,643	N=965	N=639	N=39
White n (%)	1,566 (94%)	929 (95%)	600 (93%)	37 (95%)
Black, Asian, and Minority Ethnic n (%)	62 (4%)	32 (3%)	30 (5%)	0 (0%)
Rather not say n (%)	15 (0.9%)	4 ^{ab} (0.4%)	9 ^a (1%)	2 ^b (5%)
Employment Status	N=1, 652	N=969	N=643	N=39
Full-time paid employment	838 (51%)	503 ^b (51.5%)	323 ^c (50.1%)	12 ^{bc} (30.7%)
Full-time employment but currently on sick leave	52 (3%)	31 (3%)	19 (3%)	2 (2%)
Part-time paid employment	274 (17%)	145 (15%)	120 (19%)	9 (23%)
Fully retired	110 (7%)	63 (64%)	43 (7%)	4 (10%)
Student	118 (7%)	83 ^a (9%)	34 ^{ac} (5%)	1 ^c (3%)
Unemployed and not working	99 (6%)	65 (7%)	31 (5%)	3 (8%)
Other	161 (10%)	79 ^{ab} (8%)	73 ^{ac} (11%)	8 ^{bc} (21%)
Number of physical health conditions: Mean (SD; n)	1.02 (1.36; n=1,661)	0.99 ^a (1.32; n=977)	1.06 ^{ac} (1.37; n=645)	1.62 ^c (1.90; n=39)
Mental Health Conditions	N=1,661	N=977	N=645	N=39
Anxiety	856 (52%)	521 (53%)	316 (49%)	19 (49%)
ADHD	46 (3%)	32 (3%)	13 (2%)	1 (3%)
Alcohol or Drug Addiction	35 (2%)	26 (3%)	8 (1%)	1 (3%)
Alzheimer's/ Dementia	10 (0.6%)	3 (0.3%)	6 (0.9%)	1 (2.6%)
Autism/Asperger's	109 (7%)	73 (8%)	34 (5%)	2 (5%)

Bipolar	70 (4%)	39 (4%)	29 (5%)	2 (5%)
Depression	1,145 (69%)	657 ^a (67%)	465 ^a (72%)	23 (59%)
Eating Disorder	23 (1.4%)	16 (1.6%)	7 (1%)	0 (0%)
Learning Disability	122 (7%)	71/ (7%)	48(7%)	3 (8%)
Panic Attacks	233 (14%)	136 (14%)	92 (14%)	5 (13%)
PTSD	153 (9%)	91 ^b (9%)	54 ^c (8%)	8 ^{bc} (21%)
Schizophrenia	14 (1%)	9 (1%)	5 (1%)	0 (0%)
OCD	3 (0.2%)	2 (0.2%)	1 (0.2%)	0 (0%)
Mean mental health conditions (SD; n)	1.70 (0.90; n=1,661)	1.72 (0.91; n=977)	1.67 (0.88; n=645)	1.68 (0.95; n=39)
Health condition, disability, or illness	N=1,665	N=977	N=645	N=39
Limited a Little	1454 (88%)	860 (88%)	569 (88%)	25 (64%)
Limited a Lot	207 (12%)	117 ^b (12%)	76 ^c (12%)	14 ^{bc} (36%)
Mental Wellbeing (M, SD; n)	21.49 (4.6; n= 1,560)	21.45 (4.7; n=919)	21.55 (4.5; n=603)	21.61 (4.7; n=38)
Life Satisfaction (M, SD)	6.13 (2.0; n=1,661)	6.1 (2.0; n=977)	6.19 (1.9; n=645)	6.05 (2.1; n=39)
Subjective Health Status (M, SD; n)	8.70 (4.1; n=1,612)	8.64 ^b (2.4; n=947)	8.69 ^c (2.3; n=626)	10.59 ^{bc} (4.1; n=39)
Index of multiple deprivation	N=1,257	N=1,257	N=521	N=31
Quartile 1	210 (17%)	123 (17%)	82(16%)	5 (16%)
Quartile 2	289 (23%)	163 (23%)	120 (23%)	6 (19%)
Quartile 3	377 (30%)	212 (30%)	155 (30%)	10 (32%)
Quartile 4	381 (30%)	207 (29%)	164 (32%)	10(32%)
Club Status	N=1,263	N=714	N=518	N=31
Attached	407 (32%)	135 ^a (19%)	267 ^{ac} (52%)	5/ ^c (16%)
Unattached	856 (68%)	579 (81%)	251 (49%)	26 (84%)
Mean number of parkruns run/walked per year (SD; n)	12.81 (11.9; n= 858)	8.77 ^a (10.2; n= 404)	16.75 ^{ac} (12.2; n= 439)	5.72 ^c (6.9; n=15)
Number of parkruns volunteered per year (M, SD; n)	7.42 (9.9; n=503)	1.73 ^{ab} (4.2; n=54)	7.45 ^{bc} (9.2; n=426)	20.16 ^{ac} (17.5; n=23)
Years Registered (M, SD; n)	2.80 (2.5; n=1,263)	2.19 ^a (2.3; n=714)	3.66 ^{ac} (2.5; n= 518)	2.53 ^c (2.0; n= 31)

127 Note. $p < 0.05$

128 a= Significant difference between runners/walkers and runners/walkers who volunteer

129 b= Significant difference between runners/walkers and volunteers only

130 c= Significant difference between runners/walkers who volunteer and volunteers only

131 **Descriptive Results**

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133 Descriptive statistics for the full analytical sample ($N=1,661$) are presented in Table 1.

134 Briefly, participants were on average 43.4 ± 12.8 years old, predominantly identified as

135 White (94%), female (66%), and with full time paid employment (51%). Depression (69%)

136 and anxiety (52%) were the most reported long-term mental health conditions in the overall

137 sample. 12% of participants reported their health condition, disability or illness as ‘limited a

138 lot’. 30% of the overall sample were from the least deprived areas according to the Index of

139 Multiple Deprivation, and 32% were club affiliated.

140 Table 1 also presents subgroup analyses which revealed significant differences on

141 some demographic and health-related variables: for instance, runners/walkers who volunteer

142 were significantly older than runners/walkers. Volunteers were less frequently in full-time

143 employment or studying, though were more frequently employed in the “Other” category.

144 Compared to the other two groups, volunteers had a higher number of physical conditions,

145 and there was a higher frequency of PTSD among volunteers. Volunteers reported their

146 conditions to limit them a lot (36%), more often than runners/walkers (12%) and

147 runners/walkers who volunteer (12%). Volunteers also reported worse subjective health

148 status compared to the other two groups, which, in combination with the aforementioned

149 results, suggests that overall volunteers were in poorer health compared to runners/walkers

150 and runners/walkers who volunteer.

151 The subgroups also differed on *parkrun*-related variables, as presented in Table 1.

152 Runners/walkers who volunteer were significantly more often part of a running club than the

153 other two subgroups and participated in significantly more *parkruns*, while volunteers (only)

154 have volunteered significantly more times, compared to their respective other groups. Finally,

155 runners/walkers who volunteer were registered with *parkrun* for significantly longer ($3.66 \pm$

156 2.48 years) than runners/walkers (2.19 ± 2.25 years) or volunteers (2.53 ± 2.02 years). After

157 having run the descriptive statistics, those who identified as volunteers only ($n=39$) were
 158 removed from further analysis due to their small numbers, and the subsequent analyses
 159 focused solely on runner/walkers vs. runners/walkers and volunteers.

160 **Main Results**

161 There was a statistically significant multivariate effect of participation type on
 162 perceived *parkrun* impact ($F(10, 1470) = 7.13; p < 0.001$; Wilk's $\Lambda = 0.954$, partial $\eta^2 =$
 163 0.046), based on a one-way MANOVA. Univariate analyses revealed that participation type
 164 had a statistically significant effect on physical health ($d = 0.15$), mental health ($d = 0.18$),
 165 fitness ($d = 0.20$), happiness ($d = 0.23$), time spent outdoors ($d = 0.27$), and management of
 166 their condition ($d = 0.27$) with those who run/walk and volunteer reporting higher scores (see
 167 Table 2).

168 **Table 2.** Univariate comparisons for the impact of running/walking at *parkrun* for
 169 runners/walkers compared to runners/walkers who volunteer.
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	F (1, 1,479)	p	Runners/ walkers Mean (SD)	Runner/walkers who volunteer Mean (SD)	Cohen's d Effect size [95% CI]
Time spent outdoors	26.47	<0.001	3.91 (0.67)	4.09 (0.66)	0.27 [0.17, 0.37]
Condition Management	25.74	<0.001	3.80 (0.67)	3.98 (0.66)	0.27 [0.17, 0.37]
Happiness	17.81	<0.001	3.88 (0.67)	4.03 (0.65)	0.23 [0.12, 0.32]
Fitness	13.92	<0.001	4.06 (0.63)	4.19 (0.64)	0.20 [0.10, 0.30]
Mental Health	12.63	<0.001	3.95 (0.66)	4.07 (0.67)	0.18 [0.08, 0.28]
Physical Health	9.44	0.002	3.97 (0.62)	4.07 (0.67)	0.15 [0.05, 0.26]
Confidence	3.96	0.048	3.76 (0.73)	3.84 (0.73)	0.12 [0.01, 0.21]
Ability to be active in safe environment	1.29	0.260	3.88 (0.74)	3.93 (0.76)	0.07 [0.03, 0.17]
Personal achievement	0.729	0.390	4.15 (0.69)	4.18 (0.69)	0.04 [0.05, 0.14]
Overall lifestyle choices	0.352	0.550	3.69 (0.70)	3.67 (0.73)	0.03 [0.07, 0.13]

171 *Note: N=1,481*

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173 There were significant differences between participation type and perceived social
174 inclusion variables (see Table 3 for chi-square coefficients). Compared to runners/walkers, a
175 greater percentage of runners/walkers who volunteer reported that *parkrun* made them feel
176 part of a community (29% v 56% respectively, medium effect size= 0.27). A greater
177 percentage of runners/walkers reported feeling that *parkrun* made no difference (26% v 13%,
178 small effect size= -0.13). Compared to runners/walkers, a greater percentage of
179 runners/walkers who volunteer reported that *parkrun* facilitated meeting new people (24% v
180 60% respectively, large effect size=0.36), and enhanced their interest in joining a new club
181 (13% v 29% respectively, small effect size= 0.19). Further, a greater percentage of
182 runners/walkers who volunteer, compared to runners/walkers only, reported interacting with
183 a greater number of others at the runs (43% v 12% respectively, large effect size= 0.37). This
184 included both those known to the participants (78% v 62% respectively, small effect size=
185 0.16), and those unknown (79% v 50% respectively, small effect size= 0.29).

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198 Table 3. Comparison of perceptions of social inclusion for those participating as
 199 runners/walkers and runners/walker who volunteer.
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Variable <i>n</i> (%):	Runners/ walkers N=972	Runners/walkers who volunteer N=413	X ²	<i>p</i>	Cramer's V Effect Size	
					Value	Size
Met New People	238 (24%)	386 (60%)	206.67	<0.001	0.36	Large
Feel Part of Community	282 (29%)	359 (56%)	116.7	< 0.001	0.27	Medium
Joined Group/Club	129 (13%)	186 (29%)	60.68	<0.001	0.19	Small
No Difference	258 (26%)	83 (13%)	42.89	< 0.001	-0.16	Small
Interact (0-1)	466 (48%)	139 (22%)	223.45	0.001	0.37	Large
Interact (2-3)	389 (40%)	226 (35%)				
Interact (4+)	122 (12%)	280 (43%)				
Interact Known	613 (62%)	504 (78%)	42.95	< 0.001	0.16	Small
Interact Unknown	490 (50%)	509 (79%)	135.85	< 0.001	0.29	Small

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Discussion

205 The current study sought to explore the impact of *parkrun* participation on those who
 206 self-identify themselves with a mental health condition. We found significant differences in
 207 impact on health condition, mental health, and wellbeing for those who run/walk vs. those
 208 who run/walk and volunteer. As hypothesized, those who run/walk and volunteer reported
 209 greater improvements, beyond those of simply running or walking. However, further research
 210 is needed to understand whether these scores reflect that volunteering amplifies the
 associations. Furthermore, social inclusion perceptions were different based on participation

211 type. Those who run/walk and volunteer were significantly more likely to feel part of a
212 community, to have joined a group or club since starting at *parkrun*, and to interact more
213 with others. Taken together, the findings from this study extend what is already known about
214 activity engagement, health, and wellbeing for those with mental health conditions, and
215 suggest that adding a volunteering component to one's activity engagement may add
216 additional health, wellbeing, and social inclusion benefits.

217 *parkrun* participation has a range of health and wellbeing benefits for the general
218 population, and clinicians could convey these benefits to their patients (Fleming et al., 2020).
219 However, the current findings of the correlation between impact and participation type, with
220 those who run/walk and volunteer more frequently reporting greater *parkrun* participation
221 impacts, may have additional practical and clinical implications. As Slade (2012) contends, to
222 improve community integration and social inclusion for those with serious mental illness,
223 clinicians ought to support service users to create connections and to embed themselves
224 within inclusive communities. In this way, the role of the clinician is not simply to administer
225 treatments, but also to promote service user recovery more broadly (Slade, 2012). This may
226 be done through prescriptions or referrals to *parkrun*. Similarly, Rhodes & De Jager (2014)
227 have emphasized that community-based initiatives may be adjunct and simultaneous recovery
228 tools with traditional individual therapy for individuals with mental health conditions. In their
229 systematic review of narrative studies, Rhodes and De Jager (2014) found that participants
230 mentioned professionals in their recovery journeys, but also noted family and community as
231 being even more vital to their recovery. Indeed, the wider community is already being
232 utilised in many contemporary therapies for serious mental illness, such as Multisystemic
233 Therapy for young offenders (Littell et al., 2021), Multi-Family Therapy for anorexia,
234 psychosis, and mood disorders (Asen & Scholz, 2010), and community-based Open Dialogue
235 Treatment for acute psychosis (Bergstrom et al., 2017). Though it would not be advisable to

236 recommend *parkrun* running and volunteer participation as a sole treatment, perhaps
237 clinicians could view it as a community-based initiative that could augment service-users'
238 ongoing care plans. As urged by Slade (2012), clinicians could take an active role in
239 facilitating service-users' social inclusion in the initiative. The fact that *parkrun* is free,
240 inclusive and in locations all over the UK and therefore convenient, may further facilitate the
241 uptake of *parkrun* participation among service-users whose clinicians recommend it.

242 In addition to the physical activity aspects of the runs that are emphasized by the
243 clinicians, the volunteer aspect is also deserving of clinical attention. Ballard and colleagues
244 (2021) reviewed the use of community volunteering in mental health treatment approaches.
245 They concluded that incorporating community volunteering into treatment for adolescent
246 depression holds promise, and may strengthen communities (Ballard et al., 2021). The
247 authors explained that volunteering clearly links with tenets of cognitive behavioural therapy,
248 behavioural activation and positive psychology. Fegan and Cook (2014) also examined the
249 therapeutic potential of volunteering, highlighting its potential to serve as a pathway to paid
250 work for those experiencing mental health conditions. They recommended that mental health
251 clinicians create care plans to incorporate volunteering opportunities into recovery-oriented
252 services (Fegan & Cook, 2014). Therefore, our findings add to a growing momentum to
253 utilize volunteering in mental health services and add a unique focus on recreational-based
254 volunteering. Future research may also seek to compare whether recreation/leisure-based
255 volunteering compared to other forms of volunteering have different impacts on mental
256 health recovery. Furthermore, some mental health services have supported volunteering
257 schemes wherein the service-user is supported to volunteer at the mental health hospital itself
258 or in the local community (e.g., Oxleas NHS Foundation Trust's coordinated volunteer
259 schemes). The emergence of *parkruns* on the grounds of mental health trusts (Bethlem Royal
260 Hospital in South London and Fulbourn Hospital in Cambridgeshire to date) therefore

261 presents a unique opportunity whereby trusts may look to incorporate *parkrun* volunteering
262 into established supported volunteering schemes.

263 While it has been established that participation (i.e., running) can impact social
264 inclusion and thereby overall parkrun experiences (Davis et al., 2021), the current study
265 suggests that volunteering, in addition to participating in organised community sport or
266 recreation, may strengthen those factors even more. Indeed, among those with disabilities
267 (including mental health conditions), social contacts, social support and community
268 integration are all understood to be key factors in social participation in organised community
269 sport (Klenk et al., 2019). The CHIME-D model of recovery positions Connectedness as an
270 element that supports recovery, and our findings suggests that the combination of both
271 running and volunteering may be the most effective way to foster such connectedness, in the
272 context of parkrun. That being said, a small number of individuals in the present study
273 reported solely volunteering or being ‘pure volunteers.’ Overall, those who volunteered only
274 were in worse health, as evidenced by poorer self-rated health and by a higher number of
275 conditions. It is possible that those who are volunteers only do not feel physically well
276 enough to run, which was often the case in a broader parkrun study of those who volunteer
277 (i.e., not just those with a mental health condition; Haake et al., 2022). Volunteering therefore
278 may provide a way for individuals to engage with their communities and may even act as a
279 gateway towards combined volunteering and running participation.

280 The current study’s strengths include a large sample size and a unique sample of
281 parkrunners with a mental health condition. However, this secondary analysis was cross-
282 sectional in nature and largely included self-reported, rather than objective measures. Only
283 75% of those who completed the survey could be matched to the *parkrun* data held at
284 registration, so some variables (e.g., gender) have disproportionate rates of missing variables.
285 While the original survey was advertised and available to all parkrunners over the age of 16

286 in the UK, ultimately those who self-selected to complete this research may be those who
287 have benefitted the most from the impacts of *parkrun*, so this bias must be considered. The
288 participants responded to the impact items with 5 response options that were treated as
289 continuous variables in the current study. However, it is possible that the meaning between
290 the responses is not equal between each response option which may introduce bias in the
291 reporting. Nevertheless, this study is original in exploring the health, wellbeing and social
292 impacts of both *parkrun* running and volunteering among those with mental health conditions
293 and has implications for mental health recovery research and promotion. However,
294 prospective data and research is necessary to understand whether volunteering amplifies these
295 impacts. These impacts may be particularly important for this population, who may
296 experience social exclusion in other areas of their lives (Bashir et al., 2013). Webber and
297 Fendt-Newlin (2017) reported limited evidence that supported community engagement
298 interventions offering the strongest social network gains for those with mental health
299 problems. Therefore, the findings from the current study add to and extend the current limited
300 evidence base, with *parkrun* representing a community engagement intervention, which may
301 be supported by the individuals' clinical team. Indeed, these findings also lend support to
302 Datillo's (2018) model of education for inclusive leisure services, which advocates for
303 inclusive leisure services through the promotion of physical, psychological, and social
304 engagement for all.

305 While physical activity and recreational pursuits have long been recognised as
306 beneficial for the physical and mental health of those with mental ill-health (Stubbs et al.,
307 2018), and with clinicians recognising the benefits of physical activity on mental health
308 (DeJonge et al., 2020), this study also provides evidence that volunteering might also be an
309 important role for individuals to gain further benefits. Our findings therefore have important
310 clinical implications, as they may support clinicians in endorsing or recommending

311 volunteering in the same way that they might refer to physical activity. These results also
312 have implications for messaging for parkrun- that volunteering is just as important, and even
313 if you feel too unwell or aren't physically able to run or walk, you can still participate
314 through volunteering. Nonetheless, care and attention must be directed at the management
315 and oversight of volunteers to safe and inclusive experiences. Otherwise, there is a risk that
316 volunteering may reproduce the exclusionary features found in society more broadly (Fegan
317 & Cook, 2014). Stuart and colleagues (2020) outlined a series of features that should be
318 emphasized to promote volunteer wellbeing, with "Connected" and "Inclusive" being
319 particularly relevant to the current study. Therefore, the parkrun organisation (and other
320 recreation and community-based programming) could take steps to ensure that volunteer
321 opportunities are fostering these important elements. Examples of this could include the
322 hosting of volunteer social events, where volunteers can connect with volunteer managers
323 and fellow volunteers or ensuring that volunteers have regular check-ins with their managers
324 and have opportunities to express any concerns or suggestions they may have for the
325 organization. Creating a parkrun environment in which those with mental health conditions
326 feel welcome, included, and supported to run *and* volunteer will enable participants to benefit
327 most from the program, which may ultimately benefit their broader communities as well.

328 **Conclusion:**

329 Findings suggest that there was a statistically significant multivariate effect of participation
330 type on perceived parkrun impact. It was also found that for those who run/walk and
331 volunteer, compared to those who only run/walk, parkrun made them more feel part of a
332 community and facilitated them meeting new people. These results suggest that the health,
333 wellbeing, and social inclusion benefits of parkrun participation are different for those who
334 run and volunteer, compared to those who only run. These findings may have clinical and
335 public health implications for mental health treatment, as they convey that it is not simply the

336 physical engagement in recreation that may play a role in one's recovery, but also the
337 volunteer aspect. Further research is warranted to examine the longitudinal nature of the
338 associations between volunteering and social, health and wellbeing impacts.

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