



Kickstart: A Mixed Methods Analysis of a Group Activity Program for Persons with Serious Mental Illness

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Introduction: The purpose of this study was to explore the social and emotional impact of participation in the Kickstart program (KS), which provides adults experiencing serious mental illness with weekly soccer-based sessions. **Methods:** A mixed method approach to collecting and analyzing data was utilized. Observation and focus group data was analyzed into themes describing perceived social and emotional effects of KS attendance. Physical activity was assessed with accelerometers. Self-reported mood was measured before and after each session. **Findings:** Soccer players, walkers, and inactive participants accrued 36.8 ± 10.8 , 32.1 ± 15.2 and 26.4 ± 10.0 minutes of activity, respectively. All participants demonstrated improvements in mood. Caregivers noted attendees had higher energy levels and increased morale and confidence. All three groups had significant improvements in mood after KS sessions. Change in mood scores was not correlated with steps nor minutes of physical activity. **Conclusion:** All participants had significant improvements in mood after a KS session. Although soccer players had statistically significantly better moods after KS than walkers and inactive participants, the differences in moods among attendees was small and may be irrespective of chosen activity. Changes in mood may be related to meaningfulness, rather than physical activity.

Keywords: Serious Mental Illness, Sports, Mixed Methods, Group Activity

Serious mental illnesses are often complex and chronic, with recurring exacerbations of acute symptoms amidst ongoing chronic symptoms that can interfere with daily functioning, well-being, and quality of life. Recovery, for persons experiencing serious mental illness (SMI), is not a status achieved by the absence of illness or its symptoms. Instead, recovery is an ongoing, personal process through which individuals develop agency over their own lives and their ability to engage in meaningful activities and social relationships (Vanderplasschen et al., 2013; Substance Abuse and Mental Health Services Administration (SAMHSA), 2012, p. 3). Participation in physical activity and team-based sports have been studied as strategies not only to improve symptomatology, but also to provide opportunities for social interaction and community engagement, which are pivotal to ongoing recovery for persons experiencing SMI (Anderson et al., 2019; Carless & Douglas, 2008). Research about the relationship between physical activity and health and well-being among persons experiencing SMI is lacking (Lamont et al., 2017). This research explored the social and emotional benefits of a soccer-based exercise program for adults experiencing SMI.

The Kickstart (KS) Soccer Program was started to improve the health and well-being of people experiencing SMI (Operation Get Active, 2020). Soccer has been shown to improve cardiovascular health (Milanovic et al., 2015) and health-related quality of life (Battaglia et al., 2013) among players. Group-based activity programs, including soccer, basketball, and walking programs have also had positive impacts on psychosocial and physical health experiences of participants with mental illnesses that can impact opportunities for socialization (Andersen et al., 2018; Carless and Douglass, 2007; Lamont, 2017; Mittleman et al., 2018; Swinson et al., 2018). Relevant theory on the improvement of symptoms and psychosocial interventions suggests that the normalization of social aspects of team and group physical activities leads to improvement in mood and mental health symptoms (Lamont, 2017; Moloney and Rohde, 2016; Such et al., 2018). Further, research suggests that despite evidence about the value of physical activity for improved health and well-being, adults with mental illness continue to have low levels of moderate and vigorous physical activity, higher levels of sedentary time and are less likely to meet the physical activity guidelines than those without mental illness (Chapman et al., 2016; Vancampfort et al., 2017). Few high-quality studies are available that assess the effectiveness of physical activity interventions in this population using objective physical activity monitors (Ashdown-Franks et al., 2018). Evaluating physical activity and the psychosocial experience of KS attendees will increase the knowledge of the value of physical activity and team-based sports for persons experiencing SMI.

The purpose of this study was to explore the social and emotional impact of participation in the KS program, which provides adults who live at a residential center with weekly two-hour soccer sessions. The study assessed the dose of physical activity provided by KS sessions (Independent variable, IV), as well as changes in daily mood (dependent variable, DV), and attendees' psychosocial experiences related to participation in KS (DV).

Methods

Researchers used a mixed method approach to understand levels of physical activity and reported changes in social engagement and perceived emotional states at the beginning of, during, and after the KS program. Quantitative measures of physical activity and pre-post self-

reported mood scales were used to collect attendee-specific information, and ethnographic observation and a focus group were used to qualitatively capture information about session activities and perceptions of attendees' mood and participation.

Procedures

The Intervention

The study protocol was approved by the university's institutional review board and informed consent/assent was obtained from all participants. Conservator consent was obtained for those individuals who were incapable of providing informed consent. Study participants were residents of a local residential program for persons experiencing SMI. Three staff members from the group homes actively participated in weekly KS sessions. At each session, attendees chose to play soccer, walk laps on a track around the soccer field (soccer and walking = active participation), or remain inactive (inactive participation). Attendees were allowed to change activities each week. The field was located at a YMCA satellite site but was not professionally groomed and consisted of both even and uneven ground, the latter made walking and running difficult for some KS attendees. The track around the soccer field was 244 yards per lap. Soccer drills included such activities as dribbling approximately 10 yards, shooting goals, and defending the goal, on a half-field. See Figure 1 for a description of the activity options.

Data Collection Overview

To answer the research question "what dose of physical activity does KS provide," researchers used physical activity monitors to quantitatively track the amount of physical activity residents performed. To answer the research question "how do participants feel after participating in KS" a researcher distributed mood rating scales to attendees before and after each session as a quantified pre-post measure. Qualitative data provided further insight into both questions through participant-observation and a focus group with agency caregivers, all but one of whom also attended the KS program. These qualitative data provided caregiver attendees' perceptions of how KS attendance impacted the residents' social and emotional experience and self-directed physical activity.

Data Collection – Attendees' Experience

One researcher took overt ethnographic field notes at each of the 10 KS sessions (Savin-Baden and Major, 2013). This researcher gathered these field notes while conducting participant observation, which allows a researcher to understand the program from a different perspective than that which is provided by interviews and surveys (Patton, 2015). These notes captured activities, perceived mood and energy levels of KS attendees. The researcher was a direct observer of the KS sports activities while acting as a participant observer during times when KS attendees were socializing, organizing and setting up the field, and either walking, playing soccer, or cheering other players on. The researcher made field notes including observations about the session activities, such as who participated, how they chose to participate, as well as

conversations and social interactions between attendees. These field notes were used to create qualitative, narrative data.

At each session, attendees completed pre and post mood surveys. They were asked to report their mood using an adapted version of the Ottawa Mood Scale (Cheng, 2011; Wong, 2020). The scale assesses mood on a ten point Likert Scale using faces to indicate mood (1: Sad, depressed, down; 5: In the middle, not happy nor sad; or 10: Happy, awesome, great). This assessment was repeated at the end of each session. Mood surveys yielded quantitative data reflecting changes in self-perceptions of mood pre and post activity.

Two researchers conducted a 40-minute focus group with four caregivers to gather their perceptions of how KS impacted the attendees during and after the sessions. Written data was collected during the session via two note-taking strategies. One of the researchers took notes on large flip chart paper that all participants could read and build upon as ideas were offered. Additionally, a graduate student took notes of the discussion in a notebook. The focus group was scheduled during a time when no residents were present in order to ensure conversation could flow freely and caregivers would not face the dilemma of trying to participate in a focus group when residents needed them for supervision or care. The focus group yielded qualitative, narrative data.

Data Collection - Physical Activity

Study participants were instructed to wear an Actigraph GT3x+ (ActiGraph, Pensacola, FL) triaxial accelerometer during three KS activity sessions. Participants wore the Actigraph over their right hip using an elastic waist belt and were assisted with positioning of the belt by a member of the research team. The GT3x+ is a small device that provides activity measurement in counts that are compared to established intensity cut points to classify activity behaviors (Eston et al., 1998; Evenson et al., 2008; Freedson et al., 2005; Mattocks et al., 2007; Pate et al., 2006; Puyau et al., 2002; Sirard et al., 2005; Treuth et al., 2004; Trost et al., 2011; Vanhelst et al., 2012). The Actigraph was initialized at 30 Hz and data were exported in 1-second epochs. While the Actigraph has been validated for wear on both the hip and wrist, the hip location was selected for this study because it was believed that it would be less bothersome to the participants since it would not contact or rub on the skin.

Analytic Strategy

Qualitative Analysis

Focus group notes were first coded separately by two researchers with experience in qualitative data collection and analysis, using a descriptive coding approach (Saldaña, 2021). The researchers then compared these initial codes to collapse codes into themes. There was a high level of agreement between the two coders about what elements of attendee experience the focus group respondents attributed to participation in KS, in this case physical, emotional, and social effects. To code field notes, researchers worked collaboratively to identify activities and circumstances during the KS sessions that supported the concepts that emerged during the focus groups, as well as those that were unique to the field note observations. The goal of this stage of

analysis was to identify and describe the elements of the KS program associated with the changes in attendees perceived by caregivers.

Quantitative Analysis

Actigraph data were downloaded using ActiLife (version 6.13.4) and saved in raw format as GT3X files. These files were then converted to 1-second epoch AGD format and time filtered to include only the time frame of the KS practice. AGD files were scored using cutpoints established by Troiano and colleagues (Troiano et al., 2008). Using these cutpoints, behaviors were classified as sedentary (0-99 counts per minutes [CPM]), light (100-2019 CPM), moderate (2020-5998 CPM), or vigorous (5999+ CPM). Data for each attendee for each KS session was exported to CSV files with breakdown of time spent in sedentary, light, moderate and vigorous activities and step count. These data were then aggregated based on the attendee's primary activity for the KS session (soccer, walking, inactive). Step count and minutes of each activity intensity were averaged across all attendees and all three sessions for each activity. The primary outcome was minutes of light-moderate-vigorous activity (LMVPA). Light intensity activity was added to the traditional moderate-to-vigorous physical activity (MVPA) in consideration of relative intensity, given the expected low levels of physical fitness in the attendees.

Wilcoxon Sign-Rank test was used to determine changes in mood reported on the surveys from the start of a KS session to the end of the session. Kruskal-Wallis ANOVA was used to determine differences in mood between the three groups (soccer players, walkers, and inactive participants) before and after KS sessions. Spearman's rank correlation was used to determine if there was a relationship between changes in mood during a KS session and steps or the amount of LMVPA.

Findings

Physical Activity Dose

A total of 41 observations were made with Actigraph during KS practices (23 soccer, 4 inactive, 14 walk). For all observations, the average dose of physical activity was 15.2 ± 9.9 minutes of MVPA, 17.7 ± 6.4 minutes of light activity, and 1951 ± 971.8 steps. On average, attendees who were playing soccer accrued the most activity with 19 ± 8.4 minutes of MVPA, 17.7 ± 5.6 minutes of light activity, (36.8 ± 10.8 minutes of LMVPA) and 2276 ± 765.2 steps. This was followed by walkers with 14.7 ± 11.7 minutes of MVPA, 14.7 ± 7.71 minutes of light activity (32.1 ± 15.2 minutes of LMVPA) and 1956 ± 1215.9 steps and those who were inactive with 7.1 ± 4.3 minutes of MVPA, 19.3 ± 6.3 minutes of light activity (26.5 ± 10.0 minutes of LMVPA) and 1097 ± 422.2 steps per session.

The Attendee Experience

Wilcoxon Sign-Rank test revealed significant improvements in mood after KS sessions for all groups: soccer ($Z = 5.736$, $p < 0.001$, effect size = 0.77), walkers ($Z = 4.497$, $p < 0.001$,

effect size = 0.41), and inactive participants ($Z = 2.673$, $p = 0.008$, effect size = 0.74). Effect sizes of 0.1-0.3 were considered small, 0.3-0.5 were considered medium, and above 0.5 were considered large (Pallant 2011). Effect sizes indicate a large effect for soccer players and inactive participants and a medium effect size for walkers.

Kruskal-Wallis ANOVA revealed no significant difference in mood prior to KS sessions between soccer players, walkers, and inactive participants, $H(2) = 5.51$, $p = 0.06$. However, there was a significant difference between groups in mood after KS sessions, $H(2) = 12.47$, $p = 0.002$. Post hoc analysis using a Mann-Whitney test with a Bonferroni correction of $\alpha = 0.015$ revealed that soccer players ($Md = 10$, $n = 56$) had significantly better moods after KS sessions compared to the walkers ($Md = 9$, $n = 42$) $U = 830.50$, $z = 3.01$, $p = 0.003$, with a medium effect size $r = 0.36$, and inactive participants ($Md = 8$, $n = 13$) $U = 185.50$, $z = 2.68$, $p = 0.007$, with a small effect size $r = 0.27$.

Using the Spearman's rank correlation, there was no significant correlation between change in mood scores (pre-KS session minus post-KS session mood scores) and either steps ($r = 0.13$, $p = 0.423$) nor minutes of LMVPA ($r = 0.21$, $p = 0.212$).

Qualitative data yielded four themes (physical, emotional, social, and structural aspects of KS) that provided insight into the attendees' experience and how KS influenced their health and well-being.

Physical Benefits of KS

The physical benefits of KS included personal experiences related to physical health and some changes in health-related behaviors. Some attendees and staff perceived that there were physical benefits, such as feeling more alert and energetic. One attendee stated, "I have a terrible headache, but I always feel better after I leave here (KS) 'cause the air and being here clears my head of all the things, ya know, going on," and another said, "I walk as many laps as I can. It feels good all over."

Staff reported changes in both the types of activity and levels of activity that KS attendees chose to engage in outside of program time. In general, staff perceived that those who engaged in both soccer and walking demonstrated higher activity levels outside of the KS sessions. For example, some participants began to go on walks while at the day program or group homes. One participant joined a gym and began to work out 3 times a week. Staff also reported that some participants were not "laying around" as much as they did prior to KS. Another health-related behavior that seemed to be influenced by participation in KS was smoking. Staff reported attendees did not smoke as much, and one soccer participant stated, "It keeps my mind off of smoking." Staff also reported that some residents demonstrated increased appetites after they began to participate in the KS program, which seemed to be an ongoing concern of the staff nutritionist.

Emotional Aspects of KS

Focus group participants connected KS participation to improved overall emotional states of attendees while the program was active. KS attendees expressed pride in their accomplishments. After playing soccer, one participant said, "It's my best day. I walk at home to

practice. I'm the best player here now." Another participant shared her pride in walking, saying, "I walked 3 laps today! I'm gonna walk another before I leave." Staff reported that attendees were proud of their accomplishments to be part of KS, saying that many were proud to be part of something bigger than themselves.

KS participation also seemed to relate to attendees' emotional states, while the KS program was in session. Staff reported that attendees demonstrated lighter and happier moods, increased motivation to engage in the residential community, higher energy levels, and increased morale and confidence. They found that some attendees were calmer after returning from KS sessions. Staff also reported that some attendees demonstrated improved self-regulation skills after KS sessions.

Social Aspects of KS

Focus group members expressed that KS benefited attendees' socially in terms of both their individual social behaviors and the social context of their residential community overall. During practice and soccer games, participants and staff cheered each other on, which staff believed helped build their sense of community. KS attendees shared in community lunches together after practice, which allowed KS attendees to share a meal with other KS attendees who reside in different houses. The sense of community was also shaped by attendees' continued conversations after practice. KS attendees reminisced about soccer practice and how the game went. According to staff, they talked about this even days later.

Staff also reported that attendees' social behaviors seemed to be shaped by participation in KS. Staff found attendees to have fewer behavior problems. For example, staff reported that one attendee typically demonstrated physical and social intrusiveness, and that this behavior was less of a problem while the resident attended KS activities.

The Influence of the Structure of the KS Program

The structure of the KS program overall seemed to influence attendees' social and emotional experiences. In general, the KS program possessed an egalitarian nature that was not driven by staff-to-attendee power dynamics. Staff acted as attendees and allowed all attendees to choose their activity for the day with no judgment or encouragement to select one activity over another. For example, they did not argue if an attendee opted to walk or sit and observe rather than play soccer. Attendees were given the space for agency over their engagement in the activity. Another factor that contributed to the supportive and equitable environment was that winning the soccer games was not emphasized. While they kept score, staff did not promote competition or provide awards for teams that scored more in games. Attendees reflected this atmosphere by celebrating goals, no matter what team scored them.

Staff set up and adhered to a specific routine for each session, which seemed to promote comfort with involvement and to promote agency, as attendees knew what to expect and did not rely on instructions from staff to move on to the next activity in the session. This routine let attendees know what to expect and provided cues for behavioral expectations, which seemed to promote participation and comfort with the setting, no matter the activity in which attendees engaged.

Discussion

It appears that attendance at KS is associated with improvements in mood and a modest dose of physical activity. Previous intervention studies in adults experiencing SMI have found that providing adequate social support is an important factor in achieving sufficient levels of MVPA (Bartels et al., 2013; Firth, Carney, et al., 2016). The dose of physical activity during KS practice was not directly related to changes in mood, and so it is likely that factors other than physical activity are driving these changes. Participation in any portion of the program was associated with improvements in mood as measured by the Ottawa scale, and focus group participants described improvements in KS members' social and emotional behavior while the KS program was running. This study adds to the literature describing the experience of a group-based, physical activity program as having value to psychosocial quality of life outcomes independent of physical performance targets for level of activity. This finding is also consistent with previous studies describing positive associations between membership in a group physical activity and social and psychological health (Andersen et al., 2019; Firth, Rosenbaum et al., 2016; Mittleman, 2018; Moloney & Rohde, 2017); as well as findings about arts-based inclusive group activities (Lawson et al., 2014). Other studies exploring the concept of 'meaningfulness' in activities among adults experiencing SMI have highlighted the importance of inclusive support from others and choice of activities in positive outcomes (Argentzell et al., 2012; Ikiugu et al., 2016). The notion of meaningfulness in activities may be important to the understanding of the value of programs such as KS. Meaningful activity has been defined as activity in which people perceive they have a choice to participate, and that tap into their self-worth, sense of accomplishment, agency, and competency (Ikiugu et al., 2016). Some qualities of the KS program activities reflect this conceptualization of meaningful activity. For example, it affords free choice, a sense of accomplishment, a sense of being part of something bigger than themselves, and respite from day-to-day routines. The meaning of the KS program to attendees might have contributed to its benefits in terms of mood and social engagement. Further research about the relationship between meaningfulness of activity and its benefits for adults experiencing SMI may help explain the role of group-based activity in health and wellness.

It may be surprising that attendees were active for only approximately thirty minutes per session, but this is less alarming when taken in context. Much of the early part of each KS session was relatively inactive while waiting for all attendees to arrive and taking care of "housekeeping tasks." Additionally, the small and uneven field surface necessitated slower paces in many of the attendees. When compared to school physical education (PE) sessions in elementary schools, the dose of physical activity is lower, but not drastically. Despite calls for students to be active at least 50% of the time that they are in PE class (Pate & Dowda, 2019), a 2016 meta-analysis of PE sessions found an average of 44% of time to be spent in MVPA (Hollis et al., 2016). When limited to studies that used accelerometry to measure physical activity intensity, as the current study does, this percentage dropped to less than 33%. While the dose of physical activity documented in the current study is modest, it is likely important to the health and well-being of attendees.

Unfortunately, we are unable to compare overall physical activity levels on days with KS to that on days without KS. While Actigraphs were distributed twice throughout the study with

the intention of measuring free-living physical activity, adherence to the monitors was extremely low and data were not usable. A recent meta-analysis found that approximately one-quarter of included adult studies reported some type of physical activity compensation in response to a physical activity intervention (Swelam et al., 2022). Compensation occurs when an individual engages in less physical activity than they normally would in their free time when they are also involved in a physical activity intervention. Increased fatigue, less free time, lack of motivation, and fear of overtraining may all contribute to this compensation (Gray et al., 2018). While the researchers are unaware of any studies that have investigated compensation in adults experiencing SMI, it is possible that the physical activity dose provided by KS was offset by lower physical activity levels during the remainder of the day or week. While future studies should attempt to assess this phenomenon, special consideration must be given to issues of comfort to improve adherence to activity monitors in this population.

Lessons Learned

During the data collection process, researchers noted several issues that shaped how the research was carried out. Awareness of these issues might prove useful in future research of this type and will be presented here. Coordinating with facilities was crucial to attendee well-being. The soccer field was located on a YMCA campus, about 50 yards from the building. Several attendees needed to use the restroom at some point during each session, which, according to caregivers, was a common side effect of medication. While YMCA staff were willing to allow attendees to use the soccer field at their complex, restrooms were only available to field users when a sports complex staff member was available to unlock the doors. Attendees had to walk a long distance, and sometimes had to also get a KS staff member to find YMCA staff to unlock the restroom doors. Access to shade at the field also became an issue because there was only one shaded bench at the field. This was a concern for attendees whose medications increased their sensitivity to sunlight and heat. Researchers compensated by providing several umbrellas for shade.

Coordinating with KS attendees' residential communities was also important to how KS was carried out. To adjust to the concerns about the sun and heat, KS staff tried to move sessions to earlier in the morning, but this change was not possible due to the residential facilities' schedules for morning routines, such as meals and medication administration. Consistent participation in KS was sometimes a challenge given the realities of transportation from attendees' homes. The vans available for KS transportation were also needed for transportation to residents' medical appointments. As a result, all attendees from one of the homes missed 4 of the 10 KS sessions.

Limitations

Limitations to the study include the small sample size, ability to self-select an activity at each session, and inconsistent attendance. There were also inconsistencies in adherence to the schedule for wearing physical activity monitors, as discussed above. Because KS was an outdoor activity, the schedule was affected by weather. Several sessions had to be canceled and

rescheduled due to rain or extreme heat, which extended the schedule and necessitated changes in data collection plans and may have influenced the results.

Conclusion

Soccer players, walkers, and inactive participants all had significant improvements in mood at the end of a KS session. Although soccer players had statistically significantly better moods after KS than walkers and inactive participants, the differences between moods among attendees was small and may be irrespective of chosen activity. The opportunity to engage in a meaningful activity, such as the KS program, may be relevant to attendees' experience and to changes in their mood. Improvements in mood were unrelated to both the number of steps and the amount of physical activity during sessions. Our findings contribute to knowledge about the benefits of physical activity programs for persons with serious mental illness. Findings about the potential benefits of KS, despite the relatively low levels of physical activity, suggest further research is needed about the value of group-based activity that is meaningful, social, and engaging.

References

- Andersen, M. H., Ottesen, L., & Thing, L. F. (2019). The social and psychological health outcomes of team sport participation in adults: An integrative review of research. *Scandinavian Journal of Public Health, 47*, 832-850. <https://doi.org/10.1177/1403494818791405>
- Argentzell, E. Håkansson, C., & Eklund, M. (2012). Experience of meaning in everyday occupations among unemployed people with severe mental illness. *Scandinavian Journal of Occupational Therapy, 19*(1), 49-58. <https://doi.org/10.3109/11038128.2010.540038>
- Ashdown-Franks, G., Williams, J., Vancampfort, D., Firth, J., Schuch, F., Hubbard, K., Craig, T., Gaughran, F., & Stubbs, B. (2018). Is it possible for people with severe mental illness to sit less and move more? A systematic review of interventions to increase physical activity or reduce sedentary behaviour. *Schizophrenia Research, 202*(201 8), 3–16. <https://doi.org/10.1016/j.schres.2018.06.058>
- Bartels, S. J., Pratt, S. I., Aschbrenner, K. A., Barre, L. K., Jue, K., Wolfe, R. S., Xie, H., MgHugo, G., Santos, M., Williams, G. E., Naslund, J. A., & Mueser, K. T. (2013). Clinically significant improved fitness and weight loss among overweight persons with serious mental illness. *Psychiatric Services, 64*(8), 729–736. <https://doi.org/doi.org/10.1176/appi.ps.003622012>
- Battaglia, G., Alesi, M., Inguglia, M., Roccella, M., Caramazza, G., Bellafiore, M., & Palma, A. (2013). Soccer practice as an add-on treatment in the management of individuals with a diagnosis of schizophrenia. *Neuropsychiatric Disease and Treatment, 9*, 595-603. <https://DOI:10.2147/NDT.S44066>
- Carless, D. & Douglass, K. (2008). The role of sport and exercise in recovery from serious mental illness: Two case studies. *International Journal of Men's Health, 7*(2), 137-156. <https://DOI:10.3149/jmh.0702.137>

- Chapman, J.J., Fraser, S.J., Brown, W.J., & Burton, N.W. (2016). Physical activity preferences, motivators, barriers and attitudes of adults with mental illness. *Journal of Mental Health, 25*(5), 448-454. <https://DOI:10.3109/09638237.2016.1167847>
- Cheng, M. (2011). The Ottawa Mood Scales. Ottawa: Michael Cheng.
- Eston, R.G., Rowlands, A.V., & Ingledeu, D.K. (1998). Validity of heart rate, pedometry, and accelerometry for predicting the energy cost of children's activities. *Journal of Applied Physiology, 84*(1), 362-371. <https://doi.org/10.1152/jappl.1998.84.1.362>
- Evenson, K.R., Cattellier, D., Gill, K., Ondrak, K., & McMurray, R. (2008). Calibration of two objective measures of physical activity for children. *Journal of Sports Science, 26*, 1557-1565. <https://doi.org/10.1080/02640410802334196>
- Firth, J., Carney, R., Elliott, R., French, P., Parker, S., McIntyre, R., McPhee, J. S., & Yung, A. R. (2016). Exercise as an intervention for first-episode psychosis: A feasibility study. *Early Intervention in Psychiatry, 12*(3), 307-315. <https://doi.org/10.1111/eip.12329>
- Firth, J., Rosenbaum, S., Stubbs, B., Gorczynski, P., Yung, A. R., & Vancampfort, D. (2016). Motivating factors and barriers towards exercise in severe mental illness: A systematic review and meta-analysis. *Psychological Medicine, 46*(14), 2869-2881. <https://doi.org/10.1017/S0033291716001732>
- Freedson, P.S., Pober, D., & Janz, K.F. (2005). Calibration of accelerometer output for children. *Medicine and Science in Sport and Exercise, 37*(11, Suppl. 1), S523-S530. <https://doi.org/10.1249/01.mss.0000185658.28284.ba>
- Gray, P., Murphy, M., Gallagher, A., & Simpson, E. E. A. (2018). A qualitative investigation of physical activity compensation among older adults. *British Journal of Health Psychology, 23*(1), 208-224. <https://doi.org/10.1111/bjhp.12282>
- Hollis, J. L., Williams, A. J., Sutherland, R., Campbell, E., Nathan, N., Wolfenden, L., Morgan, P. J., Lubans, D. R., & Wiggers, J. (2016). A systematic review and meta-analysis of moderate-to-vigorous physical activity levels in elementary school physical education lessons. *Preventive Medicine, 86*, 34-54. <https://doi.org/10.1016/j.ypmed.2015.11.018>
- Ikiugu, M. N., Hoyme, A. K., Mueller, B., & Reinke, R. (2016). Difference between meaningful and psychologically rewarding occupations: Findings from two pilot studies. *Journal of Occupational Science, 23*(2), 266-277. <https://doi.org/10.1080/14427591.2015.1085431>
- Lamont, E., Harris, J., McDonald, G., Kerin, T., & Dickens, G. L. (2017). Qualitative investigation of the role of collaborative football and walking football groups in mental health recovery. *Mental Health and Physical Activity, 12*, 116-123. <http://dx.doi.org/10/1016/j.mhpa.2017.03.003>
- Lawson, J., Reynolds, F., Bryant, W., & Wilson, L. (2014). 'It's like having a day of freedom, a day off from being ill': Exploring the experiences of people living with mental health problems who attend a community-based arts project, using interpretative phenomenological analysis. *Journal of Health Psychology, 19*(6), 765-777. <https://doi.org/10.1177/1359105313479627>
- Mattocks, C., Leary, S., Ness, A., Deere, K., Saunders, J., Tilling, K., Kirkby, J., Blair, S.N., & Riddoch, C. (2007). Calibration of an accelerometer during free-living activities in children. *International Journal of Pediatric Obesity, 2*(4), 218-226. <https://doi.org/10.1080/17477160701408809>

- Milanović, Z., Pantelić, S., Čović, N., Sporiš, G., & Krustrup, P. (2015). Is recreational soccer effective for improving VO₂max? A systematic review and meta-analysis. *Sports Medicine*, 45(9), 1339-1353. <https://doi.org/10.1007/s40279-015-0361-4>
- Mittleman, J., Luchtman, A., & Yatzker, U. (2018). Basketball as psycho-social therapy for adolescents in psychiatric hospitalization. *Palaestra (Macomb, Ill.)*, 32(3), 28-34.
- Moloney, L. & Rohde, D. (2016). Experiences of men with psychosis participating in a community-based football programme. *Irish Journal of Occupational Therapy*, 45(2), 100-111. <https://DOI:10.1108/IJOT.06.2017.0015>
- Operation Get Active. (2020). *2019 end of year report*. <https://operationgetactive.org/>
- Pallant, J. (2011). Survival manual. *A step by step guide to data analysis using SPSS*, 4, 4.
- Pate, R.R., Almeida, M.J., McIver, K.L., Pfeiffer, K.A., & Dowda, M. (2006). Validation and calibration of an accelerometer in preschool children. *Obesity*, 14(11), 2000–2006. <https://doi.org/10.1038/oby.2006.234>
- Pate, R. R., & Dowda, M. (2019). Raising an active and healthy generation: A comprehensive public health initiative. *Exercise and Sport Sciences Reviews*, 47(1), 3–14. <https://doi.org/10.1249/JES.0000000000000171>
- Patton, M.Q. (2015). *Qualitative research & evaluation methods: integrating theory and practice*. SAGE Publications, Inc.
- Puyau, M.R., Adolph, A.L., Vohra, F.A., & Butte, N.F. (2002). Validation and calibration of physical activity monitors in children. *Obesity Research*, 10, 150–157. <https://doi.org/10.1038/oby.2002.24>
- Saldaña, J. (2021). *The coding manual for qualitative researchers*, 4th ed. Sage Publications, Inc.
- Savin-Baden, M. & Major, C. H. (2013). *Qualitative research: The essential guide to theory and practice*. Routledge.
- Sirard, J.R., Trost, S.G., Pfeiffer, K.A., Dowda, M., & Pate, R.R. (2005). Calibration and evaluation of an objective measure of physical activity in preschool children. *Journal of Physical Activity and Health*, 2(3), 345–357. <https://doi.org/10.1123/jpah.2.3.345>
- Substance Abuse and Mental Health Services Administration (2012). SAMHSA’s working definition of recovery. [Brochure.] Retrieved from <http://store.samhsa.gov/product/SAMHSA-s-Working-Definition-of-Recovery/PEP12-RECDEF>
- Such, E., Burton, H., Copeland, R. J., Davies, R., Goyder, E., Jeanes, R., Kesterton, S., Mackenzie, K., & Magee, J. (2018). Developing a theory-driven framework for a football intervention for men with severe, moderate or enduring mental health problems: A participatory realist synthesis. *Journal of Mental Health*, 29(3), 277-288. <https://doi.org/10.1080/09638237.2019.1581339>
- Swelam, B. A., Verswijveren, S. J. J. M., Salmon, J., Arundell, L., & Ridgers, N. D. (2022). Exploring activity compensation amongst youth and adults: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 19(1), 1–25. <https://doi.org/10.1186/s12966-022-01264-6>
- Swinson, T., Wenborn, J., & Sugarhood, P. (2018). Green walking groups: A mixed-methods review of the mental health outcomes for adults with mental health problems. *British Journal of Occupational Therapy*, 83(3), 162-171, <https://doi.org/10.1177/0308022619888880>

- Treuth, M.S., Schmitz, K., Catellier, D.J., McMurray, R.G., Murray, D.M., Almeida, M.J., Going, S., Norman, J.E., & Pate, R. (2004). Defining accelerometer thresholds for activity intensities in adolescent girls. *Medicine & Science in Sports & Exercise*, 36(7), 1259–1266. <https://doi.org/10.1249/01.MSS.0000074670.03001.98>
- Trost, S.G., Loprinzi, P.D., Moore, R., & Pfeiffer, K.A. (2011). Comparison of accelerometer cut points for predicting activity intensity in youth. *Medicine & Science in Sports & Exercise*, 43(7), 1360–1368. <https://doi.org/10.1249/MSS.0b013e318206476e>
- Troiano, R. P., Berrigan, D., Dodd, K. W., Masse, L. C., Tilert, T., & McDowell, M. (2008). Physical activity in the United States measured by accelerometer. *Medicine and science in sports and exercise*, 40(1), 181-188. <https://doi.org/10.1249/mss.0b013e31815a51b3>
- Vancampfort, D., Firth, J., Schuch, F. B., Rosenbaum, S., Mugisha, J., Hallgren, M., Probst, M., Ward, P. B., Gaughran, F., De Hert, M., Carvalho, A. F., & Stubbs, B. (2017). Sedentary behavior and physical activity levels in people with schizophrenia, bipolar disorder and major depressive disorder: a global systematic review and meta-analysis. *World Psychiatry*, 16(3), 308–315. <https://doi.org/10.1002/wps.20458>
- Vanderplasschen, W., Rapp, R.C., Pearce, S., Vandeveldsde, S., & Broekaert, E. (2013). Mental health, recovery, and the community. *The Scientific World Journal*, 926174-3. <https://doi.org/10.1155/2013/926174>
- Vanhelst, J., Mikulovic, J., Bui-xuan, G., Dieu, O., Blondeau, T., Fardy, P., & Béghin, L. (2012). Comparison of two ActiGraph accelerometer generations in the assessment of physical activity in free living conditions. *BMC Research Notes*, 5, 187. <https://doi.org/10.1186/1756-0500-5-187>
- Wong, M-Y., Croarkin, P. E., Lee, C. K., & Lee, P. F. (2021). Validation of pictorial mood assessment with Ottawa Mood Scales and the positive and negative affect scale for young adults. *Community Mental Health Journal*, 57, 529-539. <https://doi.org/10.1007/s10597-020-00679-4>

Figure 1: KS Program Participation Options

Kickstart Sessions

