

Editorial

Cite this article: van der Meer L, Wunderink C (2019). Contemporary approaches in mental health rehabilitation. *Epidemiology and Psychiatric Sciences* **28**, 9–14. <https://doi.org/10.1017/S2045796018000343>

Received: 31 May 2018
Accepted: 10 June 2018
First published online: 25 July 2018

Key words:

Evidence-based psychiatry; psychiatric services; psychosis; rehabilitation; schizophrenia

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Contemporary approaches in mental health rehabilitation

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Abstract

In many European countries, deinstitutionalisation has been an ongoing process over the last few decades. Mental health organisations were transformed to provide support in a more integrated and comprehensive manner, preferably in their own homes in the community. Yet, despite the welcome aspiration of community integration for all, people with complex mental health problems (also termed severe mental illness) have continued to require high levels of support, in inpatient settings and in the community. This group's needs make them highly dependent on their caregivers. The attitudes, knowledge and skills of the staff providing treatment and support is crucial to their recovery. Rehabilitation programmes provide a much-needed framework to guide practitioners and help them organise and focus their recovery-oriented approach. In this editorial, we will provide a non-exhaustive overview of such rehabilitation programmes and interventions to illuminate the wide scope and practical usability of these interventions for this group of people with complex mental health problems.

Introduction

In many European countries such as Italy, the Netherlands and the UK, deinstitutionalisation has been an ongoing process over the last few decades. Mental health organisations were transformed to decentralise care (and funding) away from large hospitals and provide support in a more integrated and comprehensive manner, 'wrapped around' service users in, preferably, their own homes in the community. There were many drivers for this change, including the ideological view that all people, including those with disabilities, should be able to participate in society to their best ability, and the economic necessity for health systems to deliver care more efficiently, through the development of community mental health services in co-operation with social services and housing providers. Yet, despite the welcome aspiration of community integration for all, some individuals with especially complex mental health problems have continued to require high levels of support, in inpatient settings and in the community (Farkas *et al.*, 1987; Munk-Jorgensen, 1999). Parabiaghi *et al.* (2006) and Delespaul *et al.* (2013) have defined this group as those with severe mental illnesses who have associated social and functional impairments (e.g. a GAF score ≤ 50), a relatively long duration of illness (at least 2 years) and require co-ordinated, intensive, psychiatric rehabilitation services for their complex needs. Since this group's needs make them highly dependent on their caregivers, the attitudes, knowledge and skills of the staff providing treatment and support are crucial to their recovery.

In order to provide recovery-orientated care to people with severe and complex mental health needs, practitioners must be skilled in engaging service users and building trusting relationships over time to allow authentic, collaborative discussions about the person's views and recovery goals. This is no easy task given the complexity of the service user group, many of whom may struggle to reflect and express themselves due to the cognitive impairments associated with their mental health problems. Specific tools and interventions need to be tailored to address the individual's particular problems. Since most service users will have multiple problems, the complex interventions required are often delivered within rehabilitation programmes, providing an important framework to guide practitioners and help them to organise and focus their approach.

The active recovery triad

In recent years, this group of service users has been the centre of attention in the development of a new model for care in the Netherlands named the 'Active Recovery Triad' or ART (van Mierlo *et al.*, 2016). The model aims to implement recovery-oriented care into longer term mental health inpatient and supported accommodation facilities. The ART model was co-developed with service users, family members, mental health care professionals, policy

makers, social workers and other stakeholders. Central to its three pillars is the service users' *Recovery* process, which includes recovery of personal identity, daily functioning, community and social roles and health (physical as well as mental health). The importance of co-operation between service user, staff, family and significant others, the *Triad*, is emphasised at the individual, team and organisational level. There is explicit acknowledgement that the gradual steps needed to make progress are only possible if the process is *Active*, recognizing that all members of the triad need to engage proactively with it. Operationalising the model aims to enable service users to have much more autonomy in major life decisions (e.g. choosing where they wish to live) and to clarify the specific steps that need to be attained within specific timeframes to achieve their recovery goals. This clarity is welcome, giving all members of the triad clear expectations of the aims of treatment and support within specific timeframes, something that has been shown to be positively associated with successful move-on from longer term mental health settings (Taylor Salisbury *et al.*, 2017). The ART model and its accompanying fidelity instrument is currently being validated and we plan to assess its effectiveness in future studies.

Engaging people

Since people with complex mental health needs have problems with motivation and organisational skills that impact their ability to manage day-to-day tasks, mental health rehabilitation programmes have a major emphasis on engaging individuals in activities. For those who are at an earlier stage of recovery, this may involve identification of incentives to encourage the person to get out of bed, to attend to their self-care or to spend some time in a communal area. Over time, the person may gradually become more confident and be able to engage in one-to-one sessions or groups. There is no 'one size fits all' approach since each person will have different challenges and it will require an individualised approach to help them gain or regain skills for everyday living. As they progress, staff will support them to access community resources that can further enhance their abilities. In recent years, there has been a move away from the provision of mental health day centres that provide less structured 'drop-in' sessions exclusively to mental health service users and greater encouragement to support service users to access mainstream leisure activities, education and employment. Whatever the pros and cons of this, the importance of engagement in activity has been clear for decades, with many studies showing the negative association between 'time spent doing nothing' and poor outcomes (Wing and Brown, 1970; Curson *et al.*, 1992), and that engagement in activities has a positive impact on negative symptoms (Buchain *et al.*, 2003; Cook and Howe, 2003).

Specific rehabilitation interventions

Cognitive interventions

There is a known association between the specific cognitive impairments associated with complex psychosis and functional outcome (Green *et al.*, 2000; Bowie *et al.*, 2006; Koren *et al.*, 2006; Nakagami *et al.*, 2008; Harvey and Strassnig, 2012; Arnon-Ribinfeld *et al.*, 2017). It is this relationship that forms the basis of rehabilitation interventions targeting cognition.

Some of these interventions use compensatory approaches, while others aim at improving functional outcome through improving cognition.

One such compensatory approach is cognitive adaptation training (CAT), a home-based intervention that aims to bypass cognitive deficits by using environmental aids. A number of studies have demonstrated that CAT can be an effective tool to improve everyday functioning of service users with severe mental health problems living in the community (Velligan *et al.*, 2000, 2002, 2008). In a Canadian adaptation of CAT, the sustainability of the intervention was improved by augmentation with case management (Kidd *et al.*, 2014). The approach has also been adapted for family members to assist in sustaining its effects, though this has not as yet been evaluated (Kidd *et al.*, 2018). A pilot study of CAT delivered as a nursing intervention to people with more severe and complex mental health problems demonstrated promising results in terms of improvements in everyday functioning and engaging in daily activities (Quee *et al.*, 2014). A subsequent large-scale randomised controlled trial (RCT) has corroborated these findings but results are not yet published (Stiekema *et al.*, 2015). Even though CAT is not designed to improve cognitive functioning, such improvements have been demonstrated alongside improvements in everyday functioning (Fredrick *et al.*, 2015).

Cognitive remediation (CR) interventions specifically aim to improve cognition. Several meta-analyses demonstrated a small-to-moderate effect on cognitive and functional outcomes, with some differences in effect depending on the type of CR delivered (McGurk *et al.*, 2007; Wykes *et al.*, 2011; Cella *et al.*, 2017). Although there are a number of different types of CR, they generally adopt a 'drill and practice' approach or are more 'strategy-based'. The former approach seems to be better at improving cognition, while the latter is more inclined to improve functioning and thus its effects seem more transferable to daily life (McGurk *et al.*, 2007). Evidence also suggests that CR can be effective in reducing negative symptoms (Cella *et al.*, 2017), which may particularly be beneficial for users with more complex mental health problems.

Although cognitive behaviour therapy for psychosis (CBTp) has a very strong evidence base, people with complex mental health problems may be too unwell, at least at the start of their rehabilitation treatment, to be able to engage with such a structured approach. However, there is some evidence that 'low-intensity CBT' (LI CBT) may be effective (Waller *et al.*, 2013). LI CBT aims to reduce affective symptoms and may therefore be particularly relevant to service users with complex needs who have these kinds of co-morbid symptoms (Pokos and Castle, 2006). The intervention uses *behavioural activation* to increase reward by structurally changing behaviour, combined with *graded exposure* to reduce avoidance behaviour. Important advantages of this intervention are that it has a short duration and does not require intensive training of staff in the way that CBTp does.

Finally, narrative enhancement and cognitive therapy is a group-based intervention that aims to reduce service users' internalised stigma through challenging unhelpful cognitions and reconstruction of personal narratives. A number of trials have demonstrated good outcomes (Roe *et al.*, 2010, 2014; Yanos *et al.*, 2012; Hansson and Yanos, 2016; Hansson *et al.*, 2017) and an RCT in Sweden showed enduring effects 6 months after completing the intervention (Hansson *et al.*, 2017).

Lifestyle interventions

The prevalence of obesity amongst people with psychotic disorders is 41–50 v. 20–27% in the general population (Dickerson *et al.*, 2006). A review of studies of lifestyle interventions for people with psychotic disorders by Bruins *et al.* (2014) concluded that they are effective in helping people to lose weight and preventing weight gain and therefore play an important role in preventing and treating obesity. Individual programmes presented better results than group programmes, but a combined individual/group programme gave the best results. No specific elements (e.g. physical exercise, diet, psychological intervention) could be appointed that seemed to be particularly effective. Interventions also address cardiometabolic risk factors, associated with the two to threefold higher mortality rates for people with severe mental health problems compared with the general population (De Hert *et al.*, 2009). Nielsen *et al.* (2013) even demonstrated evidence that this mortality gap has increased in the past 30 years. There is also some evidence that programmes of physical exercise can reduce psychiatric symptoms (Scheewe *et al.*, 2013; Rimes *et al.*, 2015), Anxiety (Wipfley *et al.*, 2008), stress (Hofmann *et al.*, 2005) and depression (Dinas *et al.*, 2011). However, there is a paucity of large trials including service users with more severe and complex mental health problems (Looijmans *et al.*, 2017; Stiekema *et al.*, 2018). The Effectiveness of Lifestyle Interventions in Psychiatry (ELIPS) study adopted a small step approach in which the ‘obesogenic’ environment was adjusted (e.g. more healthy food options, more awareness of (un)healthy food and lifestyle, walking and talking instead of sitting down, etc.) with the aim to improve both physical health as well as psychosocial wellbeing of severe mentally ill patients living in residential care settings (Looijmans *et al.*, 2017; Stiekema *et al.*, 2018). Results demonstrated a decrease in waist circumference as well as a decrease in metabolic syndrome score after 3 months, but no effects on psychosocial variables. Results do suggest that a continued focus upon the lifestyle programme is required, as the results were no longer significant after 12 months. A comparable study was done in Denmark (Hjorth *et al.*, 2017), as a part of the European HELPS project (Weiser *et al.*, 2009) with similar results. Deenik *et al.* (2017) carried out a cross-sectional study showing that for inpatients of mental health wards, physical activity is associated with higher quality of life, especially for those patients who are least active. It therefore seems that lifestyle interventions may positively contribute to the recovery and wellbeing of service users with more severe and complex problems but more specific research amongst this group is needed. A continued focus upon these lifestyle programmes is required, however, to reach sustainable results.

Work and education

People with severe mental health problems report unmet needs in employment and daytime activities (Wiersma, 2006; Swildens *et al.*, 2011). Supporting people in these areas can be crucial to their recovery (Slade *et al.*, 2014). Any form of employment (paid or voluntary, supported or not) can add meaning and a sense of fulfilment to someone’s life. Moreover, it adds to personal growth in the sense that it helps develop skills, roles and identity. Individual placement and support (IPS) is the best known supported employment intervention for people with mental health problems and the one for which there is the strongest evidence (Drake *et al.*, 1999; Mueser *et al.*, 2004; Burns *et al.*, 2007).

It uses a direct ‘place and train’ strategy where people are supported to find and keep a competitive ‘mainstream’ job, rather than graduating from ‘a sheltered’ work environment to mainstream employment. Nuechterlein *et al.* (2008) also integrated supported education and IPS given that many service users with severe mental health problems have not completed their education, by working with teachers and family members to assist the person in developing study skills. The results of their RCT showed that this integrated programme is successful in supporting people’s return to work and/or school. Supported education is a promising practice, although there is no strong evidence yet of its association with educational attainment (Rogers *et al.*, 2010; Ringeisen, 2017). None of these models have been specifically evaluated amongst people with severe and complex mental health problems, but it is likely that they are highly relevant to people as they progress in their recovery and move from hospital settings to the community.

User-led and peer support interventions

Service users are increasingly involved in developing and evaluating mental health care policy, services and interventions. The evidence base supporting the effectiveness of service user-run services and service user-led interventions is growing (Doughty and Tse, 2011). The Wellness Recovery Action Plan (WRAP) is a widely disseminated service user-led self-management recovery programme (Fukui *et al.*, 2011). It produces an action plan that taps into key values of recovery such as hope, autonomy and self-efficacy and identifies factors that precipitate or perpetuate feelings of unwellness and the actions that need to be taken to alleviate them by the person and/or their support network (Doughty *et al.*, 2008; Cook *et al.*, 2012). While WRAP is an individualised plan, there is a growing evidence base for peer group recovery interventions for people with severe mental health problems (Castelein *et al.*, 2015). For example, Van Gestel-Timmermans *et al.* (2012) report on the effectiveness of a 12-week peer-run course called ‘Recovery is up to you’. In an RCT, they found positive effects on empowerment, hope and self-efficacy beliefs of participants.

E-mental health

There are many recent studies investigating the acceptability, feasibility and effectiveness of e-mental health interventions amongst people with mental health problems. Recent reviews of the literature suggest that, although there may be some concerns with regard to safety and privacy, in general web- and mobile-based interventions seem to be well accepted by people with severe mental health problems, mostly independent of clinical and demographic factors (Naslund *et al.*, 2015; Berry *et al.*, 2016). Mobile phone ownership amongst mental health service users has increased with a recent study showing that their ‘digital exclusion’ has decreased since 2011 (Robotham *et al.*, 2016). Qualitative studies indicate that mental health staff also hold positive views regarding the possibilities of web-based interventions, though a minority hold rather paternalistic attitudes, citing concerns about service users accessing information through the Internet about their illness that might be distressing (Berry *et al.*, 2017).

There have been no specific studies investigating the feasibility or acceptability of e-health interventions amongst people with severe and complex mental health problems. However, a recent study by Whiteman *et al.* (2017) reported on the feasibility of an adapted smartphone-delivered intervention for middle-aged

and older adults with severe mental illness. Smartphone and web-based interventions may be of particular relevance to those with more complex problems, providing an alternative approach for those who struggle with verbal communication.

Integrated rehabilitation models

The Boston psychiatric rehabilitation model

Boston, USA, has been a pioneering centre in the development and evaluation of psychiatric rehabilitation approaches since the 1990s and 'the Boston model' or Boston Psychiatric Rehabilitation Approach (BPRA) has been applied in many countries across the world. Current programmes incorporate values, procedures and practitioner skills and technologies to assist staff to deliver multiple, individually tailored evidence-based interventions as part of their daily practice. The programmes have a major focus on assisting service users to develop day-to-day living skills, to achieve their maximum level of autonomy and to live as fulfilling a life in the community as possible (Rossler, 2006; Farkas *et al.*, 2007). Many incorporate specific interventions to address co-morbidities (such as substance misuse) and enable social inclusion (e.g. through supported employment). In the Netherlands, an RCT into the effects of an individualised BPRA programme on, for example, goal attainment and social functioning of people with severe mental health problems suggests that this programme is effective in promoting societal participation and in reaching personal goals (i.e. goal attainment) (Swildens *et al.*, 2011).

The Strengths model

In this model, practitioners use a 'strengths assessment' to help service users identify their skills, talents and resources that can support them in attaining specific recovery goals (Rapp and Goscha, 2011). Problems and barriers to goal achievement are addressed by consideration of specific strengths to overcome the problem, or, where the issue seems insurmountable, to find an alternative route to goal achievement (Fukui *et al.*, 2011). The Strengths model has been incorporated into 'CARE' (Comprehensive Approach to Rehabilitation methodology; Bitter *et al.*, 2017), which aims to help service users improve their quality of life by supporting goal attainment, coping with vulnerability and improving the quality of their social environment.

Summary

Without being exhaustive, this editorial gives an overview of contemporary approaches used to support the rehabilitation and recovery of people with complex psychosis. Given the particularly challenging and diverse needs of this group, this work requires staff who are appropriately trained to deliver a range of effective interventions, tailored to the individual's particular problems. Rehabilitation practitioners need to enjoy working over the longer term with service users, building recovery-promoting relationships that pave the way for the delivery of these interventions to address the person's difficulties effectively. Holding therapeutic optimism is crucial, given that, for many individuals, hope for their recovery may have waned. All mental health services should offer a recovery-orientated approach, but practitioners who work with people with complex psychosis may benefit additionally from frameworks such as 'ART' to ensure that this focus is maintained and central to collaborative care planning.

Acknowledgement. None.

Financial support. None.

Conflict of Interest. None.

References

- Arnon-Ribenfeld N, Hasson-Ohayon I, Lavidor M, Atzil-Slonim D and Lysaker PH (2017) The association between metacognitive abilities and outcome measures among people with schizophrenia: a meta-analysis. *European Psychiatry* **46**, 33–41.
- Berry N, Lobban F, Emsley R and Bucci S (2016) Acceptability of interventions delivered online and through mobile phones for people who experience severe mental health problems: a systematic review. *Journal of Medical Internet Research* **18**, e121.
- Berry N, Bucci S and Lobban F (2017) Use of the internet and mobile phones for self-management of severe mental health problems: qualitative study of staff views. *JMIR Mental Health* **4**, e52.
- Bitter N, Roeg D, van Assen M, van Nieuwenhuizen C and van Weeghel J (2017) How effective is the comprehensive approach to rehabilitation (CARE) methodology? A cluster randomized controlled trial. *BMC Psychiatry* **17**, 396.
- Bowie CR, Reichenberg A, Patterson TL, Heaton RK and Harvey PD (2006) Determinants of real-world functional performance in schizophrenia subjects: correlations with cognition, functional capacity, and symptoms. *The American Journal of Psychiatry* **163**, 418–425.
- Bruins J, Jorg F, Bruggeman R, Slooff C, Corpeleijn E and Pijnenborg M (2014) The effects of lifestyle interventions on (long-term) weight management, cardiometabolic risk and depressive symptoms in people with psychotic disorders: a meta-analysis. *PLoS ONE* **9**, e112276.
- Buchain PC, Vizzotto AD, Henna Neto J and Elkis H (2003) Randomized controlled trial of occupational therapy in patients with treatment-resistant schizophrenia. *Revista Brasileira de Psiquiatria* **25**, 26–30.
- Burns CJ, Becker T, Drake RE, Fioritti A, Knapp M, Lauber C, Rössler W, Tomov T, van Busschbach J, White S, Wiersma D and EQOLISE Group (2007) The effectiveness of supported employment for people with severe mental illness: a randomised controlled trial. *The Lancet* **370**, 1146–1152.
- Castelein S, Bruggeman R, Davidson L and van der Gaag M (2015) Creating a supportive environment: peer support groups for psychotic disorders. *Schizophrenia Bulletin* **41**, 1211–1213.
- Cella M, Preti A, Edwards C, Dow T and Wykes T (2017) Cognitive remediation for negative symptoms of schizophrenia: a network meta-analysis. *Clinical Psychology Review* **52**, 43–51.
- Cook JA, Copeland ME, Jonikas JA, Hamilton MM, Razzano LA, Grey DD, Floyd CB, Hudson WB, Macfarlane RT, Carter TM and Boyd S (2012) Results of a randomized controlled trial of mental illness self-management using wellness recovery action planning. *Schizophrenia Bulletin* **38**, 881–891.
- Cook S and Howe A (2003) Engaging people with enduring psychotic conditions in primary mental health care and occupational therapy. *The British Journal of Occupational Therapy* **66**, 236–246.
- Curson DA, Pantelis C, Ward J and Barnes TR (1992) Institutionalism and schizophrenia 30 years on. Clinical poverty and the social environment in three British mental hospitals in 1960 compared with a fourth in 1990. *The British Journal of Psychiatry* **160**, 3.
- De Hert M, Dekker JM, Wood D, Kahl KG, Holt RI and Moller HJ (2009) Cardiovascular disease and diabetes in people with severe mental illness position statement from the European Psychiatric Association (EPA), supported by the European Association for the Study of Diabetes (EASD) and the European Society of Cardiology (ESC). *European Psychiatry* **24**, 412–424.
- Deenik J, Kruisdijk F, Tenback D, Braakman-Jansen A, Taal E, Hopman-Rock M, Beekman A, Tak E, Hendriksen I and van Harten P (2017) Physical activity and quality of life in long-term hospitalized patients with severe mental illness: a cross-sectional study. *BMC Psychiatry* **17**, 298.
- Delespaul PH and Consensusgroep EPA (2013) Consensus regarding the definition of persons with severe mental illness and the number of such persons in the Netherlands. *Tijdschrift voor Psychiatrie* **55**, 427–438.

- Dickerson FB, Brown CH, Kreyenbuhl JA, Fang L, Goldberg RW, Wohlheiter K and Dixon LB (2006) Obesity among individuals with serious mental illness. *Acta Psychiatrica Scandinavica* **113**, 306–313.
- Dinas PC, Koutedakis Y and Flouris AD (2011) Effects of exercise and physical activity on depression. *Irish Journal of Medical Science* **180**, 319–325.
- Doughty C and Tse S (2011) Can consumer-led mental health services be equally effective? An integrative review of CLMH services in high-income countries. *Community Mental Health Journal* **47**, 252–266.
- Doughty C, Tse S, Duncan N and McIntyre L (2008) The Wellness Recovery Action Plan (WRAP): workshop evaluation. *Australasian Psychiatry* **16**, 450–456.
- Drake RE, Becker DR, Clark RE and Mueser KT (1999) Research on the individual placement and support model of supported employment. *The Psychiatric Quarterly* **70**, 289–301.
- Farkas M, Jansen MA and Penk WE (2007) Psychosocial rehabilitation: approach of choice for those with serious mental illnesses. *Journal of Rehabilitation Research and Development* **44**, 879–892.
- Farkas MD, Rogers ES and Thurer S (1987) Rehabilitation outcome of long-term hospital patients left behind by deinstitutionalization. *Hospital & Community Psychiatry* **38**, 864–870.
- Fredrick MM, Mintz J, Roberts DL, Maples NJ, Sarkar S, Li X and Velligan DI (2015) Is cognitive adaptation training (CAT) compensatory, restorative, or both? *Schizophrenia Research* **166**, 290–296.
- Fukui S, Starnino VR, Susana M, Davidson LJ, Cook K, Rapp CA and Gowdy EA (2011) Effect of Wellness Recovery Action Plan (WRAP) participation on psychiatric symptoms, sense of hope, and recovery. *Psychiatric Rehabilitation Journal* **34**, 214–222.
- Green MF, Kern RS, Braff DL and Mintz J (2000) Neurocognitive deficits and functional outcome in schizophrenia: are we measuring the 'right stuff'? *Schizophrenia Bulletin* **26**, 119–136.
- Hansson L and Yanos PT (2016) Narrative enhancement and cognitive therapy: a pilot study of outcomes of a self-stigma intervention in a Swedish clinical context. *Stigma and Health* **1**, 280–286.
- Hansson L, Lexén A and Holmén J (2017) The effectiveness of narrative enhancement and cognitive therapy: a randomized controlled study of a self-stigma intervention. *Social Psychiatry and Psychiatric Epidemiology* **52**, 1415–1423.
- Harvey PD and Strassnig M (2012) Predicting the severity of everyday functional disability in people with schizophrenia: cognitive deficits, functional capacity, symptoms, and health status. *World Psychiatry* **11**, 73–79.
- Hoffmann VP, Ahl J, Meyers A, Schuh L, Shults KS, Collins DM and Jensen L (2005) Wellness intervention for patients with serious and persistent mental illness. *Journal of Clinical Psychiatry* **66**, 1576–1579.
- Hjorth P, Juel A, Hansen MV, Madsen NJ, Viuff AG and Munk-Jorgensen P (2017) Reducing the risk of cardiovascular diseases in non-selected outpatients with schizophrenia: a 30-month program conducted in a real-life setting. *Archives of Psychiatric Nursing* **31**, 602–609.
- Kidd SA, Herman Y, Barbic S, Ganguli R, George TP, Hassan S, McKenzie K, Maples N and Velligan D (2014) Testing a modification of cognitive adaptation training: streamlining the model for broader implementation. *Schizophrenia Research* **156**, 46–50.
- Kidd SA, Kerman N, Ernest D, Maples N, Arthur C, de Souza S, Kath J, Herman Y, Virdee G, Collins A and Velligan D (2018) A pilot study of a family cognitive adaptation training guide for individuals with schizophrenia. *Psychiatric Rehabilitation Journal* **41**, 109–117.
- Koren D, Seidman LJ, Goldsmith M and Harvey PD (2006) Real-world cognitive – and metacognitive – dysfunction in schizophrenia: a new approach for measuring (and remediating) more 'right stuff'. *Schizophrenia Bulletin* **32**, 310–326.
- Looijmans A, Stiekema APM, Bruggeman R, van der Meer L, Stolk RP, Schoevers RA, Jorg F and Corpeleijn E (2017) Changing the obesogenic environment to improve cardiometabolic health in residential patients with a severe mental illness: cluster randomised controlled trial. *The British Journal of Psychiatry* **211**, 296–303.
- McGurk SR, Twamley EW, Sitzer DI, McHugo GJ and Mueser KT (2007) A meta-analysis of cognitive remediation in schizophrenia. *The American Journal of Psychiatry* **164**, 1791–1802.
- Mueser KT, Clark RE, Haines M, Drake RE, McHugo GJ, Bond GR, Essock SM, Becker DR, Wolfe R and Swain K (2004) The Hartford study of supported employment for persons with severe mental illness. *Journal of Consulting and Clinical Psychology* **72**, 479–490.
- Munk-Jorgensen P (1999) Has deinstitutionalization gone too far? *European Archives of Psychiatry and Clinical Neuroscience* **249**, 136–143.
- Nakagami E, Xie B, Hoe M and Brekke JS (2008) Intrinsic motivation, neurocognition and psychosocial functioning in schizophrenia: testing mediator and moderator effects. *Schizophrenia Research* **105**, 95–104.
- Naslund JA, Marsch LA, McHugo GJ and Bartels SJ (2015) Emerging mHealth and eHealth interventions for serious mental illness: a review of the literature. *Journal of Mental Health* **24**, 321–332.
- Nielsen RE, Uggerby AS, Jensen SO and McGrath JJ (2013) Increasing mortality gap for patients diagnosed with schizophrenia over the last three decades – a Danish nationwide study from 1980 to 2010. *Schizophrenia Research* **146**, 22–27.
- Nuechterlein KH, Subotnik KL, Turner LR, Ventura J, Becker DR and Drake RE (2008) Individual placement and support for individuals with recent-onset schizophrenia: integrating supported education and supported employment. *Psychiatric Rehabilitation Journal* **31**, 340–349.
- Parabiaghi A, Bonetto C, Ruggeri M, Lasalvia A and Leese M (2006) Severe and persistent mental illness: a useful definition for prioritizing community-based mental health service interventions. *Social Psychiatry and Psychiatric Epidemiology* **41**, 457–463.
- Pokos V and Castle DJ (2006) Prevalence of comorbid anxiety disorders in schizophrenia spectrum disorders: a literature review. *Current Psychiatry Reviews* **2**, 285–307.
- Quee PJ, Stiekema AP, Wigman JT, Schneider H, van der Meer L, Maples NJ, van den Heuvel ER, Velligan DI and Bruggeman R (2014) Improving functional outcomes for schizophrenia patients in the Netherlands using cognitive adaptation training as a nursing intervention – a pilot study. *Schizophrenia Research* **158**, 120–125.
- Rapp CA and Goscha RJ (2011) *The Strengths Model. A Recovery-Oriented Approach to Mental Health Services*, 3rd Edn. New York: Oxford University Press Oxford.
- Rimes RR, de Souza Moura AM, Lamego MK, de Sa Filho AS, Manochio J, Paes F, Carta MG, Mura G, Wegner M, Budde H, Ferreira Rocha NB, Rocha J, Tavares JM, Arias-Carrion O, Nardi AE, Yuan TF and Machado S (2015) Effects of exercise on physical and mental health, and cognitive and brain functions in schizophrenia: clinical and experimental evidence. *CNS & Neurological Disorders Drug Targets* **14**, 1244–1254.
- Ringeisen H, Langer Ellison M, Ryder-Burge A, Biebel K, Alikhan S and Jones E (2017) Supported education for individuals with psychiatric disabilities: state of the practice and policy implications. *Psychiatric Rehabilitation Journal* **40**, 197–206.
- Robotham D, Satkunanathan S, Doughty L and Wykes T (2016) Do we still have a digital divide in mental health? A five-year survey follow-up. *Journal of Medical Internet Research* **18**, e309.
- Roe D, Hasson-Ohayon I, Derhi O, Yanos PT and Lysaker PH (2010) Talking about life and finding solutions to different hardships: a qualitative study on the impact of narrative enhancement and cognitive therapy on persons with serious mental illness. *The Journal of Nervous and Mental Disease* **198**, 807–812.
- Roe D, Hasson-Ohayon I, Mashiach-Eizenberg M, Derhi O, Lysaker PH and Yanos PT (2014) Narrative enhancement and cognitive therapy (NECT) effectiveness: a quasi-experimental study. *Journal of Clinical Psychology* **70**, 303–312.
- Rogers ES, Kash-MacDonald M, Bruker D and Maru M (2010) *Systematic Review of Supported Education Literature, 1989–2009*. Boston University, Sargent College, Center for Psychiatric Rehabilitation. Available at <http://www.bu.edu/drrk/research-syntheses/psychiatric-disabilities/supported-education/>.
- Rossler W (2006) Psychiatric rehabilitation today: an overview. *World Psychiatry* **5**, 151–157.
- Scheewe TW, Backx FJ, Takken T, Jorg F, van Strater AC, Kroes AG, Kahn RS and Cahn W (2013) Exercise therapy improves mental and physical health in schizophrenia: a randomised controlled trial. *Acta Psychiatrica Scandinavica* **127**, 464–473.

- Slade M, Amering M, Farkas M, Hamilton B, O'Hagan M, Panther G, Perkins R, Shepherd G, Tse S and Whitley R (2014) Uses and abuses of recovery: implementing recovery-oriented practices in mental health systems. *World Psychiatry* **13**, 12–20.
- Stiekema AP, Quee PJ, Dethmers M, van den Heuvel ER, Redmeijer JE, Rietberg K, Stant AD, Swart M, van Weeghel J, Aleman A, Velligan DI, Schoevers RA, Bruggeman R and van der Meer L (2015) Effectiveness and cost-effectiveness of cognitive adaptation training as a nursing intervention in long-term residential patients with severe mental illness: study protocol for a randomized controlled trial. *Trials* **16**, 8.
- Stiekema APM, Looijmans A, van der Meer L, Bruggeman R, Schoevers RA, Corpeleijn E and Jorg F (2018) Effects of a lifestyle intervention on psychosocial well-being of severe mentally ill residential patients: ELIPS, a cluster randomized controlled pragmatic trial. *Schizophrenia Research*.
- Swildens W, van Busschbach JT, Michon H, Kroon H, Koeter MW, Wiersma D and van Os J (2011) Effectively working on rehabilitation goals: 24-month outcome of a randomized controlled trial of the Boston psychiatric rehabilitation approach. *Canadian Journal of Psychiatry Revue Canadienne de Psychiatrie* **56**, 751–760.
- Taylor Salisbury T, Killaspy H and King M (2017) The relationship between deinstitutionalization and quality of care in longer-term psychiatric and social care facilities in Europe: a cross-sectional study. *European Psychiatry* **42**, 95–102.
- van Gestel-Timmermans H, Brouwers EP, van Assen MA and van Nieuwenhuizen C (2012) Effects of a peer-run course on recovery from serious mental illness: a randomized controlled trial. *Psychiatric Services* **63**, 54–60.
- Van Mierlo T, van der Meer L, Voskes Y, Berkvens B, Stavenuiter B and van Weeghel J (2016) *De Kunst van ART*. Utrecht: De Tijdstroom.
- Velligan DI, Bow-Thomas CC, Huntzinger C, Ritch J, Ledbetter N, Prihoda TJ and Miller AL (2000) Randomized controlled trial of the use of compensatory strategies to enhance adaptive functioning in outpatients with schizophrenia. *The American Journal of Psychiatry* **157**, 1317–1323.
- Velligan DI, Prihoda TJ, Ritch JL, Maples N, Bow-Thomas CC and Dassori A (2002) A randomized single-blind pilot study of compensatory strategies in schizophrenia outpatients. *Schizophrenia Bulletin* **28**, 283–292.
- Velligan DI, Diamond PM, Maples NJ, Mintz J, Li X, Glahn DC and Miller AL (2008) Comparing the efficacy of interventions that use environmental supports to improve outcomes in patients with schizophrenia. *Schizophrenia Research* **102**, 312–319.
- Waller H, Garety PA, Jolley S, Fornells-Ambrojo M, Kuipers E, Onumwera J, Woodall A, Emsley R and Craig T (2013) Low intensity cognitive behavioural therapy for psychosis: a pilot study. *Journal of Behavior Therapy and Experimental Psychiatry* **44**, 98–104.
- Weiser P, Becker T, Losert C, Alptekin K, Berti L, Burti L, Burton A, Dernovsek M, Dragomirecka E, Freidl M, Friedrich F, Genova A, Germanavicius A, Halis U, Henderson J, Hjorth P, Lai T, Larsen JJ, Lech K, Lucas R, Marginean R, McDaid D, Mladenova M, Munk-Jorgensen P, Paziuc A, Paziuc P, Priebe S, Prot-Klinger K, Wancata J and Kilian R (2009) European network for promoting the physical health of residents in psychiatric and social care facilities (HELPS): background, aims and methods. *BMC Public Health* **9**, 315.
- Whiteman KL, Lohman MC, Gill LE, Bruce ML and Bartels SJ (2017) Adapting a psychosocial intervention for smartphone delivery to middle-aged and older adults with serious mental illness. *The American Journal of Geriatric Psychiatry* **25**, 819–828.
- Wiersma D (2006) Needs of people with severe mental illness. *Acta Psychiatrica Scandinavica Supplementum* 115–119. doi, no. 429, pp. 115–119.
- Wing JK and Brown GW (1970) *Institutionalism and Schizophrenia*. London: Cambridge University Press.
- Wipfli BM, Rethorst CD and Landers DM (2008) The anxiolytic effects of exercise: a meta-analysis of randomized trials and dose-response analysis. *Journal of Sport & Exercise Psychology* **30**, 392–410.
- Wykes T, Huddy V, Cellard C, McGurk SR and Czobor P (2011) A meta-analysis of cognitive remediation for schizophrenia: methodology and effect sizes. *The American Journal of Psychiatry* **168**, 472–485.
- Yanos PT, Roe D, West ML, Smith SM and Lysaker PH (2012) Group-based treatment for internalized stigma among persons with severe mental illness: findings from a randomized controlled trial. *Psychological Services* **9**, 248–258.