TECHNICAL COMMENTARY

Vocational rehabilitation

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Introduction

Unemployment is particularly high in people with schizophrenia and other severe mental illnesses, resulting from a combination of disability and discrimination[1, 2].

Vocational rehabilitation is targeted towards improving employment rates in people with schizophrenia, both chronic and first-episode. There are many different strategies available that target competitive employment, which may also provide benefit for symptom severity, personal achievement, and ongoing health care costs[3]. Two key approaches for vocational rehabilitation are prevocational training and supported employment.

Prevocational training is a form of psychosocial rehabilitation that aims to increase competency for employment, by providing community-based preparation before entering into the competitive workforce. Examples of prevocational training include “clubhouses”, transitional employment, work crews, and skills training[1]. The “clubhouse” model is a historical concept that has been adapted to refer to a type of prevocational training. This model focuses on social support from a “job club” that develops work-necessary skills and administers transitional employment opportunities after a period of prevocational training[4]. Transitional employment involves having access to a set period of employment in a local company. The club and the company have an arrangement where the company offers a number of positions which the job club guarantees to fill.

The second approach to vocational rehabilitation is supported employment, which aims to support participants in finding and maintaining a job, by placing participants in employment within the community (without preparation), and providing training on location as well as ongoing support[3, 5]. One form of supported employment is the Individual Placement and Support model (IPS)[3], a manualised program that focuses on finding suitable competitive employment for prospective candidates, in addition to ongoing support and personalised benefits counselling [6]. IPS can be integrated into ongoing mental health services, ensuring access to clinicians and case managers is continuous with vocational services[7].

Method

We have included only systematic reviews (systematic literature search, detailed methodology with inclusion/exclusion criteria) published in full text, in English, from the year 2000 that report results separately for people with a diagnosis of schizophrenia, schizoaffective disorder, schizophreniform disorder or first episode schizophrenia. Reviews were identified by searching the databases MEDLINE, EMBASE, CINAHL, Current Contents, PsycINFO and the Cochrane library. Hand searching reference lists of identified reviews was also conducted. When multiple copies of reviews were found, only the most recent version was included. Reviews with pooled data are prioritised for inclusion.

Review reporting assessment was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist that describes a preferred way to present a meta-analysis[8]. Reviews with less than 50% of items checked have been excluded from the library. The PRISMA flow diagram is a suggested way of providing information about studies included and excluded with reasons for exclusion. Where no flow diagram has been presented by individual reviews, but identified studies have been described in the text, reviews have been checked for this item. Note that early reviews may have been guided by less stringent reporting checklists than the PRISMA, and that some reviews may have been limited by journal guidelines.

Evidence was graded using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) Working Group approach where high quality evidence such as that gained from randomised controlled trials (RCTs) may be downgraded to moderate or low

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if review and study quality is limited, if there is inconsistency in results, indirect comparisons, imprecise or sparse data and high probability of reporting bias. It may also be downgraded if risks associated with the intervention or other matter under review are high. Conversely, low quality evidence such as that gained from observational studies may be upgraded if effect sizes are large, there is a dose dependent response or if results are reasonably consistent, precise and direct with low associated risks (see end of table for an explanation of these terms)[9]. The resulting table represents an objective summary of the available evidence, although the conclusions are solely the opinion of staff of NeuRA (Neuroscience Research Australia).

Results

We found seven systematic reviews that met our inclusion criteria[1-4, 6, 7, 10].

- High quality evidence suggests supported employment was more effective than prevocational training for increasing long-term competitive employment rates.
- Moderate to low quality evidence suggests supported employment in combination with assertive community treatment improved employment rates compared to standard care. Conversely, prevocational training was superior to assertive community treatment alone.
- High quality evidence reported fewer hospital admissions after prevocational training compared to community care. However, moderate quality evidence suggests prevocational training did not improve employment rates compared to standard community care, but showed a small benefit compared to standard inpatient care.
- Moderate to high quality evidence indicated prevocational training in combination with psychological therapy was more effective for improving employment rates than prevocational training alone. Lower quality evidence favours paid prevocational training over unpaid prevocational training for employment rates, program participation and hospital admissions.
- High quality evidence suggests individual placement and support significantly improved competitive employment rates compared to prevocational training. Moderate to high quality evidence suggests individual placement and support provided significant benefit over standard vocational services for attaining competitive employment, increasing the number of hours/weeks worked, total earnings, and period to employment.
- Moderate quality evidence found independent earning to be more beneficial than supported or transitional employment for increased duration of employment and earning potential.

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Bond GR, Drake RE, Becker DR

An Update on Randomised Controlled Trials of Evidence-Based Supported Employment

Psychiatric Rehabilitation Journal 2008; 31(4): 280-290

View review abstract online

Comparison	**Individual Placement and Support (IPS) vs. other vocational services.**
Summary of evidence	**Moderate quality evidence (unable to assess consistency or precision, direct, large samples) suggests individual placement and support may have significant benefit over other vocational services for attaining competitive employment, number of weeks worked, and period to employment.**

Competitive employment; jobs not restricted to people with disabilities, paying at least the minimum wage in integrated community settings

11 RCT (N not reported) compared IPS with other vocational services, including non-integrated supported employment; standard vocational care (treatment as usual); sheltered workshops.

In all 11 RCT, the competitive employment rate was significantly higher for the IPS group compared to controls;

Mean employment rate: IPS 61%, control 23%

Average difference between groups: 38% (range 20-55%)

4 RCT (N = 681) favoured IPS for the percentage of participants working > 20 hours per week, with unweighted effect size = 0.67.

Seven RCT (N = 1144) favoured IPS for the number of days to first job compared to controls, the average time was 50% in the IPS group. These studies also favoured IPS for the proportion of time employment was *maintained* and was twice as long on average in the IPS group.

Consistency in results‡	Unable to assess, no measure of consistency is reported.
Precision in results§	Unable to assess, no measure of precision is reported.
Directness of results‖	Direct

Campbell K, Bond GR, Drake RE

Who Benefits From Supported Employment: A Meta-analytic Study

Schizophrenia Bulletin 2009; 37(2): 370-380

View review abstract online

Comparison	**Individual Placement and Support (IPS) services for employment vs. usual brokered vocational services which emphasise stepwise entry into employment (including group skills training, rehabilitation programs, and placements) in people with a severe mental illness, predominantly schizophrenia spectrum disorders.**
Summary of evidence	**Moderate to high quality evidence (consistent, direct, unable to assess precision, large samples) suggests IPS provided a medium to large, significant benefit over standard vocational services for improving job acquisition, total weeks worked, and job tenure. This improvement was consistent across work history, demographic and clinical characteristics.**

Factors influencing job acquisition

4 RCTs (N = 681) considered measures influencing job acquisition in IPS programs compared to standard vocational services.

A significant, large effect showed benefit of IPS over control groups;

Transformed natural log OR = 0.96 (interpretable as per Hedges *g*), $p < 0.001$

Significant, large effects in each if the following subgroups, favouring IPS;

Work history in past 5 years: Paid work ($g = 1.06$, $p < 0.000$), no paid work ($g = 1.25$, $p < 0.000$)

Age: <45 years ($g = 1.07$, $p < 0.000$), 45 years or older ($g = 1.18$, $p < 0.0010$)

Gender: Male ($g = 1.16$, $p < 0.0010$), female ($g = 0.97$, $p < 0.0010$)

Ethnicity: Caucasian ($g = 1.04$, $p < 0.000$), African American ($g = 1.21$, $p < 0.000$), Latino ($g = 0.84$, $p < 0.017$)

Education level: <High school ($g = 1.42$, $p < 0.001$), =high school ($g = 1.26$, $p < 0.001$), >high school ($g = 0.67$, $p < 0.001$)

Marital status: Never married ($g = 1.10$, $p < 0.000$), Married ($g = 1.13$, $p < 0.023$), Divorced/widowed ($g = 0.98$, $p < 0.000$)

Disability benefits: SSI ($g = 1.24$, $p < 0.000$), SSDI ($g = 1.01$, $p < 0.000$), SSI+SSDI ($g = 1.24$, $p < 0.000$), None ($g = 0.84$, $p < 0.000$)

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Homelessness: Yes (g = 1.13, p < 0.000), No (g = 1.11, p < 0.000)
Primary diagnosis: Psychotic disorder (g = 1.10, p < 0.000), mood disorder (g = 0.99, p < 0.000)
Symptoms: BPRS total < median (g = 1.01, p < 0.000), BPRS total > median (g = 1.08, p < 0.000)
Substance use: Yes (g = 0.90, p < 0.000), No (g = 1.10, p < 0.000)
Hospitalisation: Yes (g = 1.13, p < 0.000), No (g = 1.00, p < 0.000)
Factors influencing total weeks worked
4 RCTs (N = 681) considered measures influencing total weeks worked in IPS programs compared to standard vocational services.
A significant, large effect showed significant benefit of IPS over control groups; g = 0.79, p < 0.001
Significant, medium to large effects in each if the following subgroups, favouring IPS;
Work history in past 5 years: Paid work (g = 0.83, p < 0.000), no paid work history (g = 0.63, p < 0.000)
Age: <45 years (g = 0.74, p < 0.000), 45 years or older (g = 0.75, p < 0.000)
Gender: Male (g = 0.84, p < 0.000), female (g = 0.68, p < 0.000)
Ethnicity: Caucasian (g = 0.72, p < 0.000), African American (g = 0.82, p < 0.000), Latino (g = 0.83, p < 0.000)
Education level: <High school (g = 1.06, p < 0.000), =high school (g = 0.83, p < 0.000), >high school (g = 0.51, p < 0.000)
Marital status: Never married (g = 0.75, p < 0.000), Married (g = 0.94, p < 0.053), Divorced/widowed (g = 0.50, p < 0.055)
Disability benefits: SSI (g = 0.70, p < 0.000), SSDI (g = 0.91, p < 0.000), SSI+SSDI (g = 0.89, p < 0.001), None (g = 0.89, p < 0.000)
Homelessness: Yes (g = 0.95, p < 0.000), No (g = 0.60, p < 0.000)
Primary diagnosis: Psychotic disorder (g = 0.79, p < 0.000), mood disorder (g = 0.68, p < 0.000)
Symptoms: BPRS total < median (g = 0.82, p < 0.000), BPRS total > median (g = 0.63, p < 0.000)
Substance use: Yes (g = 0.62, p < 0.000), No (g = 0.81, p < 0.006)
Hospitalisation: Yes (g = 0.75, p < 0.000), No (g = 0.77, p < 0.000)
Factors influencing job tenure

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4 RCTs (N = 681) considered measures influencing job tenure in IPS programs compared to standard vocational services.

A significant, large effect showed significant benefit of IPS over control groups; $g = 0.74$, $p < 0.001$

Significant, medium to large effects in each if the following subgroups, favouring IPS;

Work history in past 5 years: Paid work ($g = 0.78$, $p < 0.000$), no paid work history ($g = 0.60$, $p < 0.000$)

Age: <45 years ($g = 0.70$, $p < 0.000$), 45 years or older ($g = 0.70$, $p < 0.000$)

Gender: Male ($g = 0.84$, $p < 0.000$), female ($g = 0.69$, $p < 0.000$)

Ethnicity: Caucasian (g = 0.66, $p < 0.000$), African American (g = 0.81, $p < 0.000$), Latino (g = 0.84, $p < 0.000$)

Education level: <High school ($g = 0.93$, $p < 0.000$), =high school ($g = 0.78$, $p < 0.000$), >high school ($g = 0.47$, $p < 0.000$)

Marital status: Never married ($g = 0.72$, $p < 0.003$), Married ($g = 1.09$, $p < 0.029$), Divorced/widowed ($g = 0.49$, $p < 0.061$)

Disability benefits: SSI ($g = 0.68$, $p < 0.000$), SSDI ($g = 0.83$, $p < 0.000$), SSI+SSDI ($g = 0.82$, $p < 0.003$), None ($g = 0.82$, $p < 0.000$)

Homelessness: Yes ($g = 0.89$, $p < 0.000$), No ($g = 0.58$, $p < 0.000$)

Primary diagnosis: Psychotic disorder ($g = 0.74$, $p < 0.000$), mood disorder ($g = 0.66$, $p < 0.000$)

Symptoms: BPRS total < median ($g = 0.79$, $p < 0.000$), BPRS total > median ($g = 0.57$, $p < 0.000$)

Substance use: Yes ($g = 0.65$, $p < 0.000$), No ($g = 0.78$, $p < 0.004$)

Hospitalisation: Yes ($g = 0.71$, $p < 0.000$), No ($g = 0.73$, $p < 0.000$)

Consistency in results	Consistency measures are not reported, authors report results are mostly consistent.
Precision in results	Unable to assess precision, confidence intervals are not reported.
Directness of results	Direct

Cook JA, Razzano L

Vocational rehabilitation for persons with schizophrenia: recent research and implications for practice

Schizophrenia Bulletin 2000; 26(1): 87-103

View review abstract online	
Comparison	**Vocational interventions (control interventions not specified) for people with schizophrenia compared to other psychiatric disorders.**
Summary of evidence	**Moderate quality evidence (direct, unable to assess consistency or precision, mostly large samples) suggests vocational interventions may be beneficial for improving employment rates and work function for people with schizophrenia compared to other psychiatric disorders. Symptom severity, social skills and cognitive impairment may be more important than diagnosis for predicting work function.**

Attaining employment

Investigations into differential outcomes of vocational rehabilitation for people with schizophrenia;

One study (N = 90) of a supported employment program found that people with schizophrenia were significantly less likely to be employed at 12 months than people with other affective and personality disorders. Members of ethnic and racial minority groups were significantly less likely to be employed than Caucasians.

One study (N = 89) of a structured job-finding interventions found that people with schizophrenia were less likely to obtain a job and more likely to withdraw from the intervention than those with any other psychiatric diagnosis.

One study (N = 500) of state-funded vocational rehabilitation services found the proportion of those with psychotic disorders successfully placed in employment (46%) was significantly smaller than for severe bipolar or depressive disorders (63%).

However, a five-site study (N = 241) of supported employment found people with schizophrenia were more likely to be employed compared to affective disorders, but this effect was lost when controlling for gender, ethnicity, education, social security income and hospitalisation.

Four additional studies (total N unclear, > 422) also reported that people with schizophrenia were no less likely to be employed following vocational interventions than other psychiatric disorders.

Two studies, N = 148, reported that between 48-57% of people with schizophrenia included in the study had obtained employment by 1-3 years follow vocational interventions.

Work functioning

One study (N not reported) reported significant functional improvement following work skills training in people with schizophrenia compared to controls.

Another study (N not reported) suggested that people with schizophrenia worked more hours in a paid placement and stayed in the job longer than those in an unpaid placement.

Clinical outcomes	
Investigating the association between symptoms and vocational outcomes; Across several psychiatric diagnoses, one study reported that greater symptom severity was associated with poorer work performance and decreased likelihood of paid employment over time. Three studies (N > 247) reported an associated between prominent negative symptoms and poorer work function. Specifically, one further study (N = 41) reported than negative symptoms including affective flattening, alogia, avolition, and attentional impairment were more strongly associated with work dysfunction than other symptoms such as thought disturbance, hostile suspicion, activation. *Investigating the association between social skills and vocational outcomes;* One study (N not reported) found an associated between social skills deficit and significantly poorer vocational outcomes over 2 years. One study (N = 46) reported on apparent levels of social skills during a staged interview, and suggested a significant effect on judgements of employability, such that lower perceived levels of communication skills were judged less employable. One study (N not reported) suggested that people with schizophrenia spectrum disorders were rated as having lower social skills than those with non-psychiatric disabilities, in terms of understanding co-workers behaviour and how their behaviour affected co-workers. *Investigating the association between cognitive impairment and vocational outcomes;* One study, N = 89, reported that executive function skills (Wisconsin Card Sorting Test) were significantly related to task orientation skills such as working persistently. However, while higher WCST scores were associated with better work performance, lower WCST were not consistently associated with poor work performance. One study, N = 40, found that better work function was associated with better complex visuo-spatial processing. Another study, N = 87, found that verbal memory impairments predicted work quality and performance habits.	
Consistency in results	Unable to assess, no measure of consistency is reported.
Precision in results	Unable to assess, no measure of precision is reported.
Directness of results	Direct

Crowther RE, Marshall M, Bond GR, Huxley P

Vocational rehabilitation for people with severe mental illness

Cochrane Database of Systematic Reviews 2001; 2: CD003080

View review abstract online	
Comparison	**Prevocational training (PVT) vs. standard hospital care.** **Note – "severe mental illness" patient sample contains a majority of schizophrenia spectrum disorders in all comparisons.**
Summary of evidence	**Moderate to low quality evidence (1 small RCT, mostly precise, direct) suggests medium size benefit of PVT for improving employment rates but not hospital discharge rate compared to standard hospital care.**
Attaining employment	
A trend effect favouring PVT in rates of competitive employment at 8 months; 1 RCT, N = 50, RR = 0.79, 95%CI 0.63 to 1.00, *p* = 0.051 *A medium effect of significantly higher numbers of patients in any form of employment at 8 months in the PVT group;* 1 RCT, N = 50, RR = 0.42 95%CI 0.26 to 0.68, NNT 1.8, *p* = 0.00042	
Program participation	
No significant difference between groups in the number of people participating in the program; 2 RCTs, N = 78, RR = 0.33, 95%CI 0.01 to 7.55, *p* = 0.49, I^2 = 0%, *p* = 1.00	
Clinical outcomes	
No significant difference between groups in the number of patients discharged from hospital by 8 months; 1 RCT, N = 50, RR = 0.95, 95%CI 0.76 to 1.19, *p* = 0.68	
Consistency in results	Not applicable, 1 RCT.
Precision in results	Precise, apart from program participation.
Directness of results	Direct
Comparison 2	**Prevocational training (PVT) vs. standard community care.**

Summary of evidence	**High quality evidence (consistent, precise, direct, large sample) suggests PVT was associated with a small effect of fewer hospital admissions at one year compared to standard community care.** **Moderate quality evidence (precise, direct, unable to assess consistency) suggests no significant benefit of PVT for improving rates of any form of employment.**
Attaining employment	
No significant difference between groups in rates of competitive employment; At 18 months: 1 RCT, N = 29, RR = 1.18, 95%CI 0.87 to 1.61, *p* = 0.29 At 24 months: 1 RCT, N = 215, RR = 0.95, 95%CI 0.77 to 1.17, *p* = 0.62 *No significant difference was also reported between groups in rates of any employment;* At 3 months: 1 RCT, N = 352, RR = 1.05, 95%CI 0.89 to 1.24, *p* = 0.53 At 6 months: 1 RCT, N = 285, RR = 0.95, 95%CI 0.81 to 1.12, *p* = 0.54 At 9 months: 1 RCT, N = 132, RR = 1.00, 95%CI 0.76 to 1.32, *p* = 1.00 At 12 months: 1 RCT, N = 215, RR = 0.95, 95%CI 0.77 to 1.17, *p* = 0.62 At 18 months: 1 RCT, N = 152, RR = 0.76 95%CI 0.57 to 1.02, *p* = 0.063	
Program participation	
No significant difference between groups in the number of people participating in the program; 2 RCTs, N = 284, RR = 0.95, 95%CI 0.52 to 1.72, *p* = 0.86, I^2 = 75%, *p* = 0.04	
Clinical outcomes	
PVT showed a small effect of significantly fewer patients admitted to hospital by 1 year compared to community care; 3 RCTs, N = 887, RR = 0.79, 95%CI 0.65 to 0.95, *p* = 0.013, I^2 = 65%, *p* = 0.06	
Consistency in results	Consistent for clinical outcomes, inconsistent for program participation, unable to assess employment outcome.
Precision in results	Precise for employment and clinical, imprecise for program participation.
Directness of results	Direct

Comparison 3	**Clubhouse approach to PVT (including work crews, social activities, transitional employment, job placement and supported accommodation) vs. standard community care.** **Note: this is a sub-sample from the above comparison.**
Summary of evidence	**Moderate quality evidence (1 large RCT, mostly precise, direct) suggests no benefit of PVT for improving employment rates but a small benefit for reducing hospital admission compared to standard community care.**
Attaining employment	
No significant difference between groups in rates of competitive employment; At 24 months: 1 RCT, N = 215, RR = 0.95, 95%CI 0.77 to 1.17, *p* = 0.62 *No significant difference between groups in rates of any employment;* At 3 months: 1 RCT, N = 352, RR = 1.05, 95%CI 0.89 to 1.24, *p* = 0.53 At 6 months: 1 RCT, N = 285, RR = 0.95, 95%CI 0.81 to 1.12, *p* = 0.54 At 12 months: 1 RCT, N = 215, RR = 0.95, 95%CI 0.77 to 1.17, *p* = 0.62	
Clinical outcomes	
A small effect of significantly fewer patients admitted to hospital in the PVT program compared to community care; 1 RCT, N = 215, RR = 0.69, 95%CI 0.49 to 0.96, *p* = 0.026	
Consistency in results	Not applicable, 1 RCT.
Precision in results	Precise, apart from hospitalisation.
Directness of results	Direct
Comparison 4	**Modified prevocational training (mPVT, incorporating pre-employment strategies enhanced by programs to increase motivation: either psychological therapy or payment) vs. prevocational training alone (PVT).**

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Summary of evidence	**Moderate to high quality evidence (consistent, precise, direct, medium samples) suggests PVT combined with psychological therapy was associated with a small effect of higher competitive employment levels than PVT alone.** **Moderate to low quality evidence (1 RCT, imprecise, direct) suggests PVT combined with payment was associated with a medium size effect of higher employment levels, better program participation and fewer hospital admissions than PVT alone.**
Attaining employment	
For mPVT incorporating payment, a medium effect of significantly higher numbers of patients in any form of employment in the mPVT group at 6 months compared to PVT alone; 1 RCT, N = 150, RR = 0.40, 95%CI 0.28 to 0.57, $p = 0.00001$ *For mPVT incorporating psychological therapy, a small effect of significantly higher numbers of patients in competitive employment in the mPVT compared to PVT alone;* *Overall:* 2 RCTs, N = 142, RR = 0.86, 95%CI 0.77 to 0.95, $p = 0.0038$, $I^2 = 66\%$, $p = 0.09$ At 6 months: 1 RCT, N = 20, RR = 0.56, 95%CI 0.29 to 1.07, $p = 0.078$ At 9 months: 1 RCT, N = 122, RR = 0.90, 95%CI 0.83 to 0.99, $p = 0.022$ *For mPVT incorporating psychological therapy, a small effect of significantly higher numbers of patients in any form of employment or education or training, in the mPVT group compared to PVT alone;* 1 RCT, N = 122, RR = 0.63, 95%CI 0.52 to 0.77, $p < 0.00001$	
Program participation	
For mPVT incorporating payment, mPVT showed a medium, significant effect of higher number of people participating than PVT alone; 1 RCT, N = 150, RR = 0.53, 95%CI 0.39 to 0.71, $p = 0.000029$ *For mPVT incorporating psychological therapy, no significant difference was reported between groups for program participation;* 2 RCTs, N = 142, RR = 0.85, 95%CI 0.33 to 2.18, $p = 0.73$, $I^2 = 56\%$, $p = 0.13$	
Clinical outcomes	
For mPVT incorporating payment, mPVT showed a significant, medium size effect that fewer patients were admitted to hospital by 1 year compared to PVT alone; 1 RCT, N = 150, RR = 0.55, 95%CI 0.31 to 0.96, $p = 0.035$ Outcome not reported for mPVT incorporating psychological therapy.	

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Consistency in results	Consistent where applicable (>1 RCT).
Precision in results	Imprecise, apart from Therapy – Competitive employment overall and at 9 months; Therapy – Any employment; Payment – Participation
Directness of results	Direct
Comparison 5	**Modified prevocational training incorporating accelerated entry to transitional employment (accPVT) vs. prevocational training with gradual entry to transitional employment (gradPVT).**
Summary of evidence	**Moderate to low quality evidence (1 RCT, medium size sample, mostly imprecise, direct) suggests no significant difference between accelerated and gradual transitional employment for employment levels, program participation or hospital readmission.**
Attaining employment	
No significant difference between accPVT and gradPVT for numbers of patients in competitive employment at 9 months, but by 15 months there is a small trend effect in favour of accPVT; At 9 months: 1 RCT, N = 131, RR = 1.00, 95%CI 0.90 to 1.10, *p* = 0.94 At 15 months: 1 RCT, N = 131, RR = 0.88, 95%CI 0.78 to 1.00, *p* = 0.05 *No significant difference between accPVT and gradPVT for numbers of patients in any employment;* At 15 months: 1 RCT, N = 131, RR = 0.96, 95%CI 0.69 to 1.33, *p* = 0.80	
Program participation	
A small trend effect toward higher program participation than accPVT at 4 months, however this effect was lost by 9 months; At 4 months: 1 RCT, N = 131, RR = 1.77, 95%CI 0.98 to 3.21, *p* = 0.059 At 9 months: 1 RCT, N = 131, RR = 1.20, 95%CI 0.74 to 1.92, *p* = 0.46	
Clinical outcomes	
No significant difference between accPVT and gradPVT for numbers of patients readmitted to hospital by 15 months; 1 RCT, N = 131, RR = 1.05, 95%CI 0.68 to 1.62, *p* = 0.84	
Consistency in results	Not applicable, 1 RCT.
Precision in results	Imprecise for all except competitive employment.

Directness of results	Direct
Comparison 6	**Supported employment vs. standard community care.**
Summary of evidence	**Moderate quality evidence (1 RCT, large sample, precise, direct) suggests a small effect such that supported employment significantly improved employment rates in the medium to long term, but no significant difference in program participation or hospital readmission.**
Attaining employment	
No significant difference for numbers of patients in competitive employment at 12 months, however by 24 months, supported employment showed a small effect of higher employment rates; At 12 months: 1 RCT, N = 256, RR = 1.01, 95%CI 0.93 to 1.09, *p* = 0.87 At 24 months: 1 RCT, N = 256, RR = 0.92, 95%CI 0.85 to 0.99, *p* = 0.025 At 36 months: 1 RCT, N = 256, RR = 0.88, 95%CI 0.82 to 0.96, *p* = 0.0029	
Program participation	
Supported employment had a small trend effect toward higher program participation than standard care; 1 RCT, N = 256, RR = 0.74, 95%CI 0.55 to 1.01, *p* = 0.056	
Clinical outcomes	
No significant difference between supported employment and standard care for numbers of patients readmitted to hospital; 1 RCT, N = 256, RR = 0.83, 95%CI 0.63 to 1.10, *p* = 0.20	
Consistency in results	Not applicable, 1 RCT.
Precision in results	Precise
Directness of results	Direct
Comparison 7	**Supported employment vs. prevocational training (PVT).**

Summary of evidence	**High quality evidence (consistent, precise, direct, large sample) suggests supported employment significantly improved competitive employment rates compared to prevocational training.** **Moderate quality evidence (inconsistent, precise, direct) suggests no difference between supported employment and prevocational training for program participation.**
Attaining employment	
Small, significant benefit of supported employment over PVT for attaining competitive employment over 24 months; At 4 months: 3 RCTs, N = 364, RR = 0.73, 95%CI 0.66 to 0.81, $p < 0.00001$, $I^2 = 61\%$, $p = 0.08$ At 6 months: 3 RCTs, N = 364, RR = 0.74, 95%CI 0.67 to 0.82, $p < 0.00001$, $I^2 = 39\%$, $p = 0.20$ At 9 months: 3 RCTs, N = 364, RR = 0.67, 95%CI 0.60 to 0.76, $p < 0.00001$, $I^2 = 0\%$, $p = 0.53$ At 12 months: 4 RCTs, N = 484, RR = 0.76, 95%CI 0.69 to 0.84, $p < 0.00001$, $I^2 = 56\%$, $p = 0.06$ At 15 months: 3 RCTs, N = 364, RR = 0.82, 95%CI 0.73 to 0.91, $p = 0.00014$, $I^2 = 0\%$, $p = 0.87$ At 18 months: 3 RCTs, N = 364, RR = 0.78, 95%CI 0.71 to 0.87, $p < 0.00001$, $I^2 = 0\%$, $p = 0.99$ At 24 months: 2 RCTs, N = 155, RR = 0.90, 95%CI 0.81 to 1.00, $p = 0.046$, $I^2 = 0\%$, $p = 0.53$ *No significant difference was reported between groups for obtaining any form of employment;* At 6 months: 1 RCT, N = 69, RR = 1.05, 95%CI 0.62 to 1.78, $p = 0.86$ At 9 months: 1 RCT, N = 69, RR = 0.61, 95%CI 0.35 to 1.08, $p = 0.088$ At 12 months: 1 RCT, N = 69, RR = 0.67, 95%CI 0.40 to 1.12, $p = 0.13$ At 15 months: 1 RCT, N = 69, RR = 0.93, 95%CI 0.53 to 1.61, $p = 0.79$ At 18 months: 1 RCT, N = 69, RR = 0.81, 95%CI 0.50 to 1.33, $p = 0.41$	
Program participation	
No significant difference between groups at 9 or 18 months. At 12 months, supported therapy showed a small effect of greater participation than PVT; At 9 months: 1 RCT, N = 86, RR = 0.95, 95%CI 0.58 to 1.54, $p = 0.83$ At 12 months: 2 RCTs, N = 295, RR = 0.67, 95%CI 0.48 to 0.96, $p = 0.028$, $I^2 = 84\%$, $p = 0.01$ At 18 months: 1 RCT, N = 69, RR = 0.37, 95%CI 0.10 to 1.32, $p = 0.12$	
Consistency in results	Consistent for employment, inconsistent for program participation, not applicable for outcomes with 1 RCT.
Precision in results	Precise

Directness of results	Direct
Comparison 8	**Individual Placement and Support (IPS) vs. prevocational training (PVT).**
Summary of evidence	**High quality evidence (consistent, precise, direct, large sample) suggests Individual Placement and Support significantly improved competitive employment rates compared to prevocational training.** **Moderate quality evidence (consistent, imprecise, direct) suggests no difference between Individual Placement and Support and prevocational training for program participation.**
Attaining employment	
Small, significant benefit of IPS over PVT for attaining competitive employment over 18 months; At 4 months: 2 RCTs, N = 295, RR = 0.70, 95%CI 0.62 to 0.78, $p < 0.00001$, $I^2 = 36\%$, $p = 0.21$ At 6 months: 2 RCTs, N = 295, RR = 0.71, 95%CI 0.63 to 0.80, $p < 0.00001$, $I^2 = 0\%$, $p = 0.85$ At 9 months: 2 RCTs, N = 295, RR = 0.66, 95%CI 0.57 to 0.75, $p < 0.00001$, $I^2 = 0\%$, $p = 0.44$ At 12 months: 2 RCTs, N = 295, RR = 0.79, 95%CI 0.70 to 0.89, $p = 0.00013$, $I^2 = 0\%$, $p = 0.48$ At 15 months: 2 RCTs, N = 295, RR = 0.83, 95%CI 0.74 to 0.93, $p = 0.0010$, $I^2 = 0\%$, $p = 0.72$ At 18 months: 2 RCTs, N = 295, RR = 0.79, 95%CI 0.70 to 0.89, $p = 0.00012$, $I^2 = 0\%$, $p = 0.90$	
Program participation	
No significant differences between IPS and PVT over 18 months; 2 RCTs, N = 295, RR = 0.52, 95%CI 0.15 to 1.85, $p = 0.31$, $I^2 = 84\%$, $p = 0.01$	
Consistency in results	Consistent
Precision in results	Precise for employment, imprecise for participation.
Directness of results	Direct

Killackey EJ, Jackson HJ, Gleeson J, Hickie IB, McGorry PD

Exciting career opportunity beckons! Early intervention and vocational rehabilitation in first-episode psychosis: employing cautious optimism.

Australian & New Zealand Journal of Psychiatry 2006; 40(11-12): 951-62 View review abstract online	
Comparison 1	**Clubhouse programs (prevocational training - PVT and transitional employment) vs. other psychosocial therapies.**
Summary of evidence	**Moderate quality evidence (1 RCT, unable to assess precision, direct, medium to large sample) suggests prevocational training was more effective than assertive community treatment (intensive case management) for improvement of duration of employment and wages earned.** **Moderate quality evidence (unable to assess precision, direct) reported independent earning was more beneficial than supported or transitional employment for duration of employment and earning potential.**
Employment outcomes	
Three studies investigated clubhouse models of PVT. One RCT, N = 175, compared Clubhouse PVT with a program of Assertive Community Treatment, a form of intensive case management. PVT provided significant benefit over ACT for duration of employment, hourly earnings, and tenure of position ($p < 0.01$), although ACT was significantly better than PVT for program retention at 24 months ($p < 0.01$). Subgroup analysis comparing Clubhouse transitional employment with Clubhouse membership without transitional employment (Club Non-TE) favoured Club Non-TE in most comparisons, including wages, hours worked, and weeks worked. One follow-up study, N = 1702, compared transitional employment, supported employment and independent employment. Those in independent employment had the greatest days employed, highest earnings and most hours per week (statistics not reported). One single-group study (N = 138) reported transitional employment was associated with greater number of hours worked (OR = 2.025), with the best predictor of TE tenor being increased length of clubhouse membership.	
Consistency in results	Unable to assess, no measure of consistency is reported.
Precision in results	Unable to assess, no measure of precision is reported.
Directness of results	Direct
Comparison 2	**Individual Placement and Support (IPS) vs. other vocational services.**

Summary of evidence	**Moderate quality evidence (unable to assess consistency or precision, direct, large sample) suggests individual placement and support (supported employment) had significant benefit over other vocational services for attaining competitive employment, number of hours/weeks worked, total earnings, and period to employment.**
Employment outcomes	
Four studies compared IPS with various vocational services. Four studies (N = 718) reported that IPS showed significant benefit over either group skills training, enhanced vocational rehabilitation, psychosocial rehabilitation, or brokered vocational services for attaining competitive employment, number of hours/weeks worked, total earnings, and period to employment (no statistics reported).	
Consistency in results	Unable to assess, no measure of consistency is reported.
Precision in results	Unable to assess, no measure of precision is reported.
Directness of results	Direct

Kinoshita Y, Furukawa TA, Kinoshita K, Honyashiki M, Omori IM, Marshall M, Bond GR, Huxley P, Amano N, Kingdon D

Supported employment for adults with severe mental illness

Cochrane Database of Systematic Reviews 2013; Issue 9. Art. No.: CD008297. DOI: 10.1002/14651858.CD008297.pub2

View review abstract online

Comparison	**Supported employment for adults with schizophrenia vs. other vocational approaches.** **Note: some samples also included bipolar disorder, major depressive disorder, and severe personality disorders.**
Summary of evidence	**Moderate to low quality evidence (inconsistent, imprecise, direct, large samples) suggests a large effect of supported employment increasing levels of employment more than other vocational approaches.**
Employment outcomes	

Significant, large effect of increased levels of any employment during the study period with supported employment; 7 RCTs, N = 951, RR 3.24, 95%CI 2.17 to 4.82, $p < 0.00001$, I^2 74%, $p = 0.00084$ There was also increased length of any form of paid employment, increased job tenure (in weeks), increased paid employment, and decreased time to first competitive employment in the long term. Only 3/7 studies conducted outcome assessments blind to treatment allocation.

Consistency in results	Inconsistent
Precision in results	Imprecise
Directness of results	Direct

Twamley EW, Jeste DV, Lehman AF

Vocational Rehabilitation in Schizophrenia and Other Psychotic Disorders: Literature Review and Meta-Analysis of Randomised Controlled Trials

Journal of Nervous and Mental Disease 2003; 191(8): 515-523

View review abstract online

Comparison	**Supported employment (SE) or psychosocial rehabilitation vs. treatment as usual or other vocational programs.**
Summary of evidence	**Moderate to low quality evidence (imprecise, unable to assess consistency, large samples, indirect) suggests supported employment had large benefit over other vocational services for attaining employment.**

Attaining employment
A significant, medium-sized effect favours vocational interventions over any control condition for attaining employment either during or after the study; 11 RCTs, N = 1617, $d = 0.66$, CIs not reported *A significant, large effect supporting SE over other vocational services for the number of patients working at any time during the study;* 5 RCTs, N not reported, $d = 0.79$, CI not reported

Consistency in results	Unable to assess

Precision in results	Imprecise
Directness of results	Indirect comparison

Explanation of acronyms

ACT = assertive community treatment, CI = Confidence Interval, *d* = Cohen's *d* and *g* = Hedges' *g* = standardised mean differences (see below for interpretation of effect size), I^2 = the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance), IPS = Individual Placement and Support employment programs, mPVT = modified prevocational training, N = number of participants, NNT = number needed to treat, OR = odds ratio, *p* = statistical probability of obtaining that result ($p < 0.05$ generally regarded as significant), PVT = prevocational training, Q = Q statistic (chi-square) for the test of heterogeneity, RCT = randomised controlled trial, RR = relative risk, SE = supported employment, SSI = supplemental security income, SSDI = Social Security Disability Insurance

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Explanation of technical terms

* Bias has the potential to affect reviews of both RCT and observational studies. Forms of bias include; reporting bias – selective reporting of results; publication bias - trials that are not formally published tend to show less effect than published trials, further if there are statistically significant differences between groups in a trial, these trial results tend to get published before those of trials without significant differences; language bias – only including English language reports; funding bias - source of funding for the primary research with selective reporting of results within primary studies; outcome variable selection bias; database bias - including reports from some databases and not others; citation bias - preferential citation of authors. Trials can also be subject to bias when evaluators are not blind to treatment condition and selection bias of participants if trial samples are small[11].

† Different effect measures are reported by different reviews.

Weighted mean difference scores refer to mean differences between treatment and comparison groups after treatment (or occasionally pre to post treatment) and in a randomised trial there is an assumption that both groups are comparable on this measure prior to treatment. Standardised mean differences are divided by the pooled standard deviation (or the standard deviation of one group when groups are homogenous) which allows results from different scales to be combined and compared. Each study's mean difference is then given a weighting depending on the size of the sample and the variability in the data. 0.2 represents a small effect, 0.5 a medium effect, and 0.8 and over represents a large effect[11].

Prevalence refers to how many existing cases there are at a particular point in time. Incidence refers to how many new cases there are per population in a specified time period. Incidence is usually reported as the number of new cases per 100,000 people per year. Alternatively some studies present the number of new cases that have accumulated over several years against a person-years denominator. This denominator is the sum of individual units of time that the persons in the population are at risk of becoming a case. It takes into account the size of the underlying population sample and its age structure over the duration of observation.

Reliability and validity refers to how accurate the instrument is. Sensitivity is the proportion of actual positives that are correctly identified (100% sensitivity = correct identification of all actual positives) and specificity is the proportion of negatives that are correctly identified (100% specificity = not identifying anyone as positive if they are truly not).

Odds ratio (OR) or relative risk (RR) refers to the probability of a reduction (< 1) or an increase (> 1) in a particular outcome in a treatment group, or a group exposed to a risk factor, relative to the comparison group. For example, a RR of 0.75 translates to a reduction in risk of an outcome of 25% relative to those not receiving the treatment or not exposed to the risk factor. Conversely, a RR of 1.25 translates to an increased risk of 25% relative to those not receiving treatment or not having been exposed to a risk factor. A RR or OR of 1.00 means there is no difference between groups. A medium effect is considered if RR > 2 or < 0.5 and a very large effect if RR > 5 or < 0.2[12]. lnOR stands for logarithmic OR where a lnOR of 0 shows no difference between groups. Hazard ratios

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measure the effect of an explanatory variable on the hazard or risk of an event.

Correlation coefficients (eg, r) indicate the strength of association or relationship between variables. They can provide an indirect indication of prediction, but do not confirm causality due to possible and often unforseen confounding variables. An r of 0.10 represents a weak association, 0.25 a medium association and 0.40 and over represents a strong association. Unstandardised (*b*) regression coefficients indicate the average change in the dependent variable associated with a 1 unit change in the independent variable, statistically controlling for the other independent variables. Standardised regression coefficients represent the change being in units of standard deviations to allow comparison across different scales.

‡ Inconsistency refers to differing estimates of effect across studies (i.e. heterogeneity or variability in results) that is not explained by subgroup analyses and therefore reduces confidence in the effect estimate. I^2 is the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance) - 0% to 40%: heterogeneity might not be important, 30% to 60%: may represent moderate heterogeneity, 50% to 90%: may represent considerable heterogeneity and over this is considerable heterogeneity. I^2 can be calculated from Q (chi-square) for the test of heterogeneity with the following formula[11];

$$I^2 = \left(\frac{Q - df}{Q}\right) \times 100\%$$

§ Imprecision refers to wide confidence intervals indicating a lack of confidence in the effect estimate. Based on GRADE recommendations, a result for continuous data (standardised mean differences, not weighted mean differences) is considered imprecise if the upper or lower confidence limit crosses an effect size of 0.5 in either direction, and for binary and correlation data, an effect size of 0.25. GRADE also recommends downgrading the evidence when sample size is smaller than 300 (for binary data) and 400 (for continuous data), although for some topics, these criteria should be relaxed13.

‖ Indirectness of comparison occurs when a comparison of intervention A versus B is not available but A was compared with C and B was compared with C that allows indirect comparisons of the magnitude of effect of A versus B. Indirectness of population, comparator and/or outcome can also occur when the available evidence regarding a particular population, intervention, comparator, or outcome is not available and is therefore inferred from available evidence. These inferred treatment effect sizes are of lower quality than those gained from head-to-head comparisons of A and B.

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