Measures to Avoid Coercion in Psychiatry and Their Efficacy

Sophie Hirsch, Tilman Steinert

Summary

Background: Coercive measures such as seclusion and restraint encroach on the patient’s human rights and can have serious adverse effects ranging from emotional trauma to physical injury and even death. At the same time, they may be the only way to avert acute danger for the patient and/or the hospital staff. In this article, we provide an overview of the efficacy of the measures that have been studied to date for the avoidance of coercion in psychiatry.

Methods: This review is based on publications retrieved by a systematic search in the Medline and Cinahl databases, supplemented by a search in the reference lists of these publications. We provide a narrative synthesis in which we categorize the interventions by content.

Results: Of the 84 studies included in this review, 16 had a control group; 6 of these 16 were randomized controlled trials (RCTs). The interventions were categorized by seven different types of content: organization, staff training, risk assessment, environment, psychotherapy, debriefings, and advance directives. Most interventions in each category were found to be effective in the respective studies. 38 studies investigated complex treatment programs that incorporated elements from more than one category; 37 of these (including one RCT) revealed effective reduction of the frequency of coercion. Two RCTs on the use of rating instruments to assess the risk of aggressive behavior revealed a relative reduction of the number of seclusion measures by 27% and a reduction of the cumulative duration of seclusion by 45%.

Conclusion: Complex intervention programs to avoid coercive measures, incorporating elements of more than one of the above categories, seem to be particularly effective. In future, cluster-randomized trials to investigate the individual categories of intervention would be desirable.

Cite this as:
death during periods of restraint (8, 9). Similarly, a study that retrospectively investigated 110 cases of sudden cardiac death particularly in young adults described 34 cases in association with restraints. This study included cases of restraint by security staff, the police, or laypersons; nine of the deaths actually did have an association with restraint by psychiatric specialist personnel (10). Immobilization as a result of restraint is accompanied by risks of venous thromboembolism and infection, much in the same way as other forms of immobilization. An autopsy study that included three patients who had died while being restrained found pulmonary artery embolisms in all three; in all cases the restraint was maintained for as long as three to five days (11).

Methods
The databases Medline and Cinahl were searched up to April 2018. We included studies that investigated interventions to reduce coercive measures (seclusion and restraint [SR]) in adult patients with severe psychiatric disorders. Figure 1 shows the literature search and selection. This review was undertaken as part of the German clinical practice guidelines for the prevention of coercion and the prevention and treatment of aggressive behavior in the adult psychiatric setting (12, 13) and updated for this article. SH and EF screened the literature independently. Where disagreements arose, they jointly reviewed the article in question. The guideline report online includes a detailed description of the study methods (14).

Results
A total of 90 articles (84 studies) were included (15–33, e2–e72). Of the 84 included studies, 16 had a control group. Of these, only six studies were randomized (15–19, e3). The controlled studies also had methodological weaknesses (Table 1, eTable).

In principle, complex treatment programs that included several interventions were distinguished from simple interventions. We identified 38 studies that investigated complex programs.

46 studies dealt with a simple, clearly defined intervention. Seven intervention categories were identified:
* Staff training
* Organization
* Risk assessment
* Environment
* Debriefings
* Psychotherapy
* Advance directives.

In 42 studies, staff training to improve handling of aggression and violence, as well as de-escalating counseling techniques, were evaluated. In 13 cases, this was a single individual intervention, and in 29 cases, it took the shape of complex intervention programs that included staff training as a partial intervention. Staff training as an individual/single intervention was studied only in a randomized controlled trial (RCT) from 1995, which had an observation/follow-up interval of only two weeks. The others were mainly before-and-after comparisons. In the RCT, rates of coercion were lowest in the group in which staff had received theoretical training and done practical exercises to de-escalate the situation (five episodes of restraint in two weeks versus eight or ten restraining episodes, respectively, in the groups without or with exclusively theory-based training); attacks on staff and injuries were also rarer (e3). Altogether, eight of twelve of the simple interventions for staff training and all 29 complex interventions that included staff training were accompanied by a reduction in coercion rates.

35 studies included interventions at the organizational level. Eleven studies described individual
## Table 1
Controlled studies of reducing coercive measures and resultant guideline recommendations

<table>
<thead>
<tr>
<th>Study</th>
<th>Randomized</th>
<th>Quality assessment</th>
<th>Evidence level</th>
<th>Efficacy</th>
<th>Intervention</th>
<th>Recommendation in German clinical practice guideline (12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boumans et al. (e7)</td>
<td>–</td>
<td>Internal validity 2/9 points, low quality</td>
<td>2</td>
<td>Number of episodes of SR and cumulative duration were reduced</td>
<td>Complex</td>
<td>Complex, structured treatment programs for reducing coercive measures should be undertaken and explicitly supported by the hospital management.</td>
</tr>
<tr>
<td>Øhlenschlæger et al. (18)</td>
<td>+</td>
<td>3/9, low</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Putkonen et al. (19)</td>
<td>+</td>
<td>4/9, low</td>
<td>3</td>
<td>Number of episodes of SR and cumulative duration were reduced</td>
<td>Complex</td>
<td>–</td>
</tr>
<tr>
<td>Wieman et al. (29)</td>
<td>–</td>
<td>3/9, low</td>
<td>–</td>
<td>Cumulative duration of SR was reduced, number of episodes was not reduced</td>
<td>Complex</td>
<td>–</td>
</tr>
<tr>
<td>Phillips et al. (e3)</td>
<td>+</td>
<td>6/9, acceptable</td>
<td>2</td>
<td>Number of episodes of SR was reduced</td>
<td>Staff training</td>
<td>In the context of aggression management training, all staff should be schooled and trained in de-escalation techniques and strategies to deal with aggressive behavior.</td>
</tr>
<tr>
<td>Bowers et al. (e9, e10)</td>
<td>–</td>
<td>2/9, low</td>
<td>3</td>
<td>–</td>
<td>Staff training</td>
<td>–</td>
</tr>
<tr>
<td>Whitecross et al. (e2)</td>
<td>–</td>
<td>4/9, low</td>
<td>3</td>
<td>Cumulative duration of SR was reduced, number of episodes was not reduced</td>
<td>Debriefings</td>
<td>To reduce restraining measures, debriefings should be offered after coercive measures and documented.</td>
</tr>
<tr>
<td>Abderhalden et al. (16)</td>
<td>+</td>
<td>8/9, high</td>
<td>2</td>
<td>Number of episodes of SR was reduced</td>
<td>Risk assessment</td>
<td>Instruments for structured risk assessment and instruments for early intervention in case of escalation should be used in psychiatric hospitals to reduce coercion and force.</td>
</tr>
<tr>
<td>van de Sande et al. (17)</td>
<td>+</td>
<td>4/9, low</td>
<td>2</td>
<td>Cumulative duration of SR was reduced, numbers of episodes and proportion of patients affected by SR were not reduced</td>
<td>Risk assessment</td>
<td>–</td>
</tr>
</tbody>
</table>
Interventions and 24 studies described complex inter-
vention programs. The interventions entailed, for
example, a more detailed investigation and documen-
tation of coercive measures, open ward doors, more
staff, smaller ward sizes, and closer dovetailing of in-
patient and outpatient treatment services. Overall, six
out of 11 of the simple organizational interventions
and 23 out of the 24 complex interventions that in-
cluded organizational components were associated
with a reduction in coercive measures (eFigure 1). In
a randomized controlled and a further non-random-
ized comparison trial, programs in which patients
themselves were allowed to decide whether they
wanted to be admitted as inpatients were found not to
be effective in reducing coercive measures (15, 20).
In a controlled trial, the reduction in ward size was as-
sociated with a reduction in coercive measures (e4).
For the remaining simple organizational interven-
tions, only before-and-after comparisons or retrospec-
tive studies were available.

We also studied interventions for identifying
at-risk patients for aggressive behavior. The Brøset
Violence Checklist as a standardized instrument to
predict risk was effective in reducing seclusion rates
in two RCTs. In one study, the relative risk for
coercion in the intervention group was reduced by
27% (146 instances of seclusion/6074 treatment days
before the intervention versus 135 instances of seclu-
sion/7727 treatment days after the intervention),
whereas in the control group, it increased by 10%
(92 instances of seclusion/8449 treatment days before
the intervention versus 126 instances of seclu-
sion/10,485 treatment days after the intervention;
\(p<0.001\) [16]). In the other study the cumulative
duration of the seclusion incidents was reduced by
45% (the risk of being secluded at a particular point in
time on the intervention wards before the intervention
was 1.12 times the risk in the control wards (95%
confidence interval 1.01 to 1.19); after the interven-
tion it was 0.62 times the risk (0.58 to 0.66, \(p<0.05\)
[17]). In the identified studies, individual crisis plans
were deployed in addition to standardized risk predic-
tion instruments, which included patient specific
early warning symptoms and interventions that had
been experienced as helpful. All these interventions
were associated with a reduction in coercive
measures.

Nine studies investigated interventions to improve
the therapeutic environment as an individual/single
intervention, and an additional 13 studies investigated
these as a part-intervention of a complex program. A
total of eight studies investigated the architecture and
design/layout of psychiatric wards. 16 studies investi-
gated the therapeutic use of sensory stimuli. The latter
subcategory included the provision of special rooms
("sensory rooms") and giving patients the option
to remove themselves voluntarily from stress or
stimulus overload and to expose themselves instead to
positive stimuli (weighted blankets, aromatherapy
oils, music) (eFigure 2). A total of four controlled

<table>
<thead>
<tr>
<th>Study</th>
<th>Quality assessment*1</th>
<th>Efficacy Evidence level*2</th>
<th>Intervention</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cummings et al. (55)</td>
<td>1/9 very low</td>
<td>3</td>
<td>Sensory modulation</td>
<td>Sensory modulation</td>
</tr>
<tr>
<td>Teitelbaum et al. (21)</td>
<td>1/9 very low</td>
<td>1</td>
<td>Sensory modulation</td>
<td>Sensory modulation</td>
</tr>
<tr>
<td>Lloyd et al. (22)</td>
<td>1/9 very low</td>
<td>1</td>
<td>Sensory modulation</td>
<td>Sensory modulation</td>
</tr>
</tbody>
</table>

*1 Quality assessment according to the checklists of the Scottish Intercollegiate Guidelines Network (e73)
*2 Evidence levels following the recommendations of the Oxford Centre for Evidence-Based Medicine (e74)
1 = Systematic review, which includes several randomized controlled trials (RCTs)
2 = Randomized controlled trial or observational study with dramatic effect
3 = Non-randomized controlled trial
4 = Before and after comparisons, case–control studies, case series
5 = Theoretical deductions, expert opinion
*3 SR: seclusion and restraint
*4 Complex intervention programs combine interventions from different areas (e.g., psychotherapy, staff training, use of data)
*5 Using comforting sensory stimuli (e.g., music, aromatherapy oils) to reduce tension

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Scientifically evaluated treatment programs to reduce coercion

- **Safewards**
  
  (UK, free of charge, [http://www.safewards.net](http://www.safewards.net))
  
  - Improving communication on the wards (appreciation, de-escalation)
  - Strengthening the therapeutic community
  - Getting to know each other for staff and patients
  - Calming methods—for example, sensory modulation
  - Dealing with good/bad news, discharge news

- **Six Core Strategies**
  
  (USA, subject to a charge)
  
  - Staff training
  - Senior management included
  - Documentation and use of data
  - Debriefings
  - Involving peers in the care of people with mental health problems
  - Instruments for avoiding coercive measures—for example, the Brøset Violence Checklist

- **Engagement Model**
  
  (USA, not used in the German healthcare system)
  
  - Strengthening the therapeutic community
  - Improving the atmosphere on the ward
  - Improving therapeutic and leisure time services

Follow-up discussions of the coercive measure with patients took place in 13 studies. In nine studies, the behavior of the patients and staff, and their interactions, were discussed and suggestions for improvement were developed. In four studies, a trauma therapeutic debriefing took place. Only one controlled trial studied debriefings as a single/individual intervention. The seclusion intervals in the intervention group were shorter and the repeated seclusions in the intervention group were rarer. The total number of seclusions was not significantly reduced, however (e2).

Psychotherapeutic treatment programs were evaluated in 15 studies. In addition to programs that used behavioral therapeutic approaches (such as operant conditioning and social learning), some disorder specific programs for persons with personality disorders included elements of psychodynamic psychology. The studies of family therapy or those that involved relatives included elements of systemic therapy. In addition to these three large psychotherapeutic approaches/schools, individual treatment planning and life skills training were also counted among the psychotherapeutic programs. Only for one intervention did we include a controlled study that achieved by means of structured treatment planning for each patient, in combination with the systematic involvement of relatives, a reduction in seclusion measures and the time patients spent in seclusion on the intervention ward (e7). Overall, indications of the efficacy of such programs were seen in longer term treatment settings, such as in rehabilitation wards or in forensic wards/hospitals, from before-and-after comparisons. For example, in one forensic unit, instances of seclusion per patient were reduced from 4.8 to 2.3 and the average duration of such incidents fell from 11.2 hours to 5.8 hours after a program of social learning had been introduced (e8).

In studies from England, joint crisis plans reduced in part compulsory admissions/institutionalizations and the duration of inpatient stays. The results were inconsistent, however. There still isn’t any proof that coercive measures can also be reduced in this way (23). Controlled trials are lacking.

An RCT from Denmark studied the effect of integrated treatment programs in patients with an initial manifestation of schizophrenic psychosis on coercive measures. 167 outpatients and inpatients in the intervention group received assertive community treatment as well as social competence training and group psychoeducation, together with their families. 161 patients received standard treatment. Differences between the groups did not reach significance as regards the rates of inpatient seclusion and restraint (18). Of the complex treatment programs for reducing coercive measures, the Six Core Strategies, the Engagement Model, and the Safewards concept have been scientifically evaluated, in addition to the described integrated treatment program. The Six Core Strategies (Box) has been studied in several countries and settings and has overall been found to be effective. Seven studies evaluating the Six Core Strategies were included in the present study (19, 24–29), among them an RCT (19). In the RCT, the intervention was introduced in the first six months of 2009 and continued until the end of the year. Treatment days when coercive measures were used and the duration of these measures were reduced significantly, and no increase in violent assaults was noted. On the intervention wards, the proportion of days in which coercion was used fell from 30% in July of the intervention year to 15% in December (on control wards from 25% to 19%); the cumulative duration of restraint and seclusion fell from 110 hours to 56 hours (control wards: increase from 133 hours to 150 hours) (19). The cornerstones of the Engage-
ment Model are primarily the strengthening of the therapeutic community and improvement of the atmosphere on the ward, as well as of therapeutic and leisure-time services. In a US hospital, coercion as well as injuries to staff were notably reduced over the long term (30, 31). In Europe, however, this program has thus far not been systematically used or studied. Safewards reduced seclusion and restraint according to a controlled study that included 44 psychiatric wards in Australia. After the intervention had been introduced, instances of seclusion in the wards fell by 36%, whereas rates of seclusion on wards without Safewards did not fall (32) (Table 2).

Discussion

For our article, we intentionally chose broad inclusion criteria, which includes the methodological perspective. We accepted that the results of individual studies were in some cases probably subject to substantial biases and from a scientific/academic perspective not terribly robust. Restricting ourselves to randomized or at least controlled trials would certainly have improved things, but would have led to a great loss of data because only six or 16 studies, respectively, met these criteria. However, what applies for the RCTs as well as for the total number of studies, is that programs that begin in the wards/hospitals are effective, whereas programs that begin before inpatient admission have thus far (in the very few available studies) not shown any effect. For safety relevant endpoints, randomization is often not possible, for practical and ethical reasons. Often, if randomization of individual persons is not possible, cluster randomization at the ward level is an option (for example, half of the wards apply a certain intervention, the other half doesn’t). In contrast to pharmacological studies, blinding of the treating professionals and patients/subjects is not possible in milieu-therapeutic, psychotherapeutic, or social interventions; it isn’t possible either if institutional parameters or legal specifications change.

A further problem lies in the fact that many people who are subjected to restraining measures or seclusion are not able to give legally valid consent to study participation. In particular, prospective cohort studies without randomization should be undertaken, to which patients consent retrospectively and can then, for example, either participate in a survey on the intervention that took place, or refuse participation, in which case they would be excluded from the analysis (34). Furthermore, the individual elements of the intervention programs should be evaluated in controlled and— wherever possible—cluster randomized and at least rater-blinded studies. For example, study data on staff trainings are not consistent. One reason may be that primarily those staff members will participate in voluntary staff training who are interested in reducing force and coercion anyway. This would mean selection bias and ceiling effects. In this setting it would be necessary to study compulsory training in randomized designs in order to clarify whether empathy and motivation to reduce coercion are immutable characteristics of the staff members or whether they could be improved by further training in staff members with a greater potential for improvement.

Conclusion and outlook

Most of the interventions that formed the basis of the studies we evaluated for this review were effective. Measures should be implemented at various levels in an organization—for example, programs for the standardized documentation of violent assaults and coercive measures in the entire hospital and programs for standardized documentation and multidisciplinary debriefings after violent assaults and coercive measures on individual wards.

Almost all programs in the included studies are designed for use in psychiatric hospitals. For the systematic reduction of force and coercion, programs should also be conducted outside hospitals, in order to improve the living conditions of people with mental illness and outpatient treatment options, so as to primarily avoid crisis situations. Adequate staffing levels and financial funding for the social psychiatric support system are required, as are appropriate attitudes on the part of the staff (also emergency ambulance and police staff) and within the population.

TABLE 2

Numbers of included studies that investigated different interventions

<table>
<thead>
<tr>
<th>Intervention</th>
<th>No of studies (of which RCTs)</th>
<th>Number of studies that reported a reduction in coercive measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>9 (0)</td>
<td>7 (0)</td>
</tr>
<tr>
<td>Organization</td>
<td>11 (1)</td>
<td>6 (0)</td>
</tr>
<tr>
<td>Staff training</td>
<td>13 (1)</td>
<td>9 (1)</td>
</tr>
<tr>
<td>Psychotherapy</td>
<td>5 (0)</td>
<td>5 (0)</td>
</tr>
<tr>
<td>Risk assessment</td>
<td>5 (2)</td>
<td>5 (2)</td>
</tr>
<tr>
<td>Debriefing</td>
<td>2 (0)</td>
<td>2 (0)</td>
</tr>
<tr>
<td>Advance directive</td>
<td>1 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Complex interventions</td>
<td>38 (2)</td>
<td>37 (1)</td>
</tr>
</tbody>
</table>

*Complex intervention programs combine interventions from different categories (eg, psychotherapy, staff training, use of data) RCTs, randomized controlled trials

Acknowledgment

We thank Erich Flammer (EF) for his help in the literature selection.

Conflict of interest statement

The authors declare that no conflict of interest exists.

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Key messages

- Complex intervention programs have been found to be effective in randomized controlled trials. According to what is currently known, different interventions with positive effects on seclusion and restraint should be used in combination in order to optimize the effects.
- In at-risk populations, risk assessment instruments (checklists) should be used in order to avoid coercion.
- Staff in all professional groups that work in patient care should be trained in de-escalation techniques.
- Coercive measures such as seclusion and restraint should be discussed with patients in a debriefing session.
- The hospital management should take responsibility for reducing coercive measures.

References


Skin Discoloration Following Total Knee Replacement

A 63-year-old man presented with bluish-livid discoloration of the skin over the knee joint. Fourteen years previously he had undergone primary knee replacement. Clinical examination revealed popliteal and pre-patellar bluish-livid discoloration. Elsewhere this cutaneous discoloration had been interpreted as varicosis. Knee joint radiographs showed asymmetry of the joint space as a sign of polyethylene wear. Intraoperatively we found polyethylene wear with ensuing metallosis. Conversion to a rotating hinge knee prosthesis was performed. The patient was discharged 9 days after surgery. Total knee replacement is generally a successful procedure with survival rates of at least 10 to 15 years. Polyethylene wear is a known late complication necessitating revision. However, cutaneous discoloration has not previously been described as the first sign of polyethylene wear with ensuing metallosis.

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Measures to Avoid Coercion in Psychiatry and Their Efficacy

by Sophie Hirsch and Tilman Steinert


Supplementary material to:

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References


Improving the organizational framework in the psychiatric care system, especially on admission wards, as a contribution to reducing coercion.

Ward atmosphere and the targeted therapeutic use of sensory stimuli to reduce coercive measures on psychiatric wards (from [13]).
### Controlled trials of reducing coercive measures and resultant guideline recommendations

<table>
<thead>
<tr>
<th>Study</th>
<th>Randomized</th>
<th>Quality assessment</th>
<th>Evidence level</th>
<th>Efficacy</th>
<th>Intervention</th>
<th>Recommendation in German clinical practice guideline (12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourmans et al. (e7)</td>
<td>-</td>
<td>Internal validity 2/9 points Low quality</td>
<td>2</td>
<td>Number of episodes of SR and cumulative duration were reduced</td>
<td>Complex</td>
<td>Complex, structured treatment programs for reducing coercive measures should be undertaken and explicitly supported by hospital management.</td>
</tr>
<tr>
<td>Øhlenschlæger et al. (18)</td>
<td>+</td>
<td>3/9 Low Patients, treating staff not blinded, differences in treatment intensity between groups, data on SR electronically documented in a standardized way</td>
<td>-</td>
<td>-</td>
<td>Complex</td>
<td>-</td>
</tr>
<tr>
<td>Putkonen et al. (19)</td>
<td>+</td>
<td>4/9 Low Patients, treating staff not blinded, different sized wards in control and intervention groups, no information about whether patients were transferred between wards, data on SR electronically documented in a standardized way</td>
<td>2</td>
<td>Number of episodes of SR and cumulative duration were reduced</td>
<td>Complex</td>
<td>-</td>
</tr>
<tr>
<td>Wieman et al. (29)</td>
<td>-</td>
<td>3/9 Low No information on comparability of different centers, the use of validated instruments, or independent raters</td>
<td>2</td>
<td>Cumulative duration of SR was reduced, number of episodes was not reduced</td>
<td>Complex</td>
<td>-</td>
</tr>
<tr>
<td>Phillips et al. (e3)</td>
<td>+</td>
<td>6/9 Acceptable Subjects were blinded at least to the intervention that the other participants received, use of validated instruments</td>
<td>3</td>
<td>Number of episodes of SR was reduced</td>
<td>Staff training</td>
<td>In the context of aggression management training, all staff members should be schooled and trained in de-escalation techniques and strategies for dealing with aggressive behavior.</td>
</tr>
<tr>
<td>Bowers et al. (e9, e10)</td>
<td>-</td>
<td>2/9 Low Not blinded, comparability of wards not clear, dropout rate 20% (1 of 5 wards), SR only two components of the outcome score</td>
<td>3</td>
<td>-</td>
<td>Staff training</td>
<td>-</td>
</tr>
<tr>
<td>Whitecross et al. (e2)</td>
<td>-</td>
<td>4/9 Low Not blinded, only 20% of secluded patients participated voluntarily in the study (risk of selection bias), standardized collection of SR data prescribed by the government, use of validated instruments</td>
<td>3</td>
<td>Cumulative duration of SR was reduced, number of episodes was not reduced</td>
<td>Debriefings</td>
<td>To reduce coercive measures, debriefings should be offered, undertaken, and documented after restrictive measures.</td>
</tr>
<tr>
<td>Study</td>
<td>Randomized</td>
<td>Quality assessment*1</td>
<td>Evidence level*2</td>
<td>Efficacy</td>
<td>Intervention</td>
<td>Recommendation in German clinical practice guideline (12)</td>
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</tr>
<tr>
<td>Abderhalden et al. (16)</td>
<td>+</td>
<td>8/9</td>
<td>2</td>
<td>Number of episodes of SR was reduced</td>
<td>Risk prediction</td>
<td>Instruments for structured risk assessment and instruments for early intervention in case of escalation should be used in psychiatric hospitals to reduce coercion and force.</td>
</tr>
<tr>
<td>van de Sande et al. (17)</td>
<td>+</td>
<td>4/9</td>
<td>3</td>
<td>Cumulative duration of SR was reduced, number of episodes and rate of patients affected by SR was not reduced</td>
<td>Risk prediction</td>
<td></td>
</tr>
<tr>
<td>Cummings et al. (e5)</td>
<td>–</td>
<td>1/9</td>
<td>3</td>
<td>–</td>
<td>Sensory modulation*5</td>
<td>As alternatives to seclusion, patients should be offered appropriate rooms/refuges to withdraw to, with the opportunity to calm down/relax and occupy themselves.</td>
</tr>
<tr>
<td>Teitelbaum et al. (21)</td>
<td>–</td>
<td>1/9</td>
<td>3</td>
<td>Number of episodes of SR was reduced</td>
<td>Sensory modulation</td>
<td></td>
</tr>
<tr>
<td>Lloyd et al. (22)</td>
<td>–</td>
<td>1/9</td>
<td>3</td>
<td>Number of episodes of SR was reduced, cumulative and mean duration of measures were not reduced</td>
<td>Sensory modulation</td>
<td></td>
</tr>
</tbody>
</table>

*1 Quality assessment according to the checklists of the Scottish Intercollegiate Guidelines Network (e73)
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